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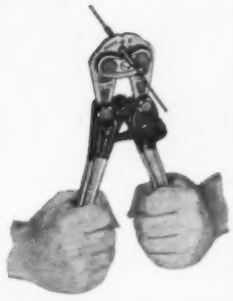

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TELEPHONY

The Journal of the Telephone Industry

APRIL 24, 1943

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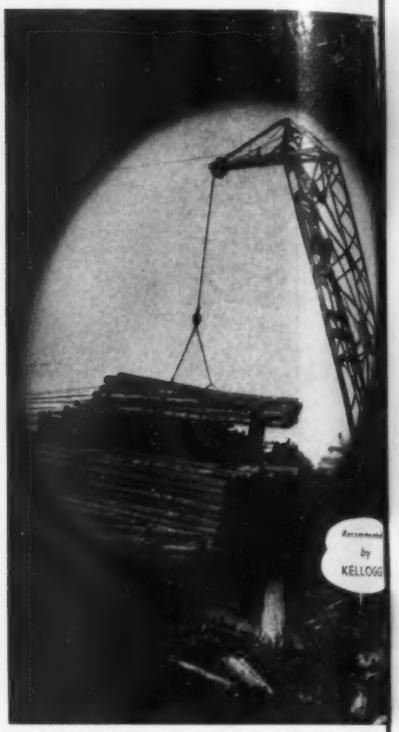
National Telephone Supply Co. Nicopress—that's the *complete* method of splicing and dead ending. It includes splicing sleeves for line drop and inside wires, dead-ends, repair sleeves, reducing sleeves and tools for compression sleeves.



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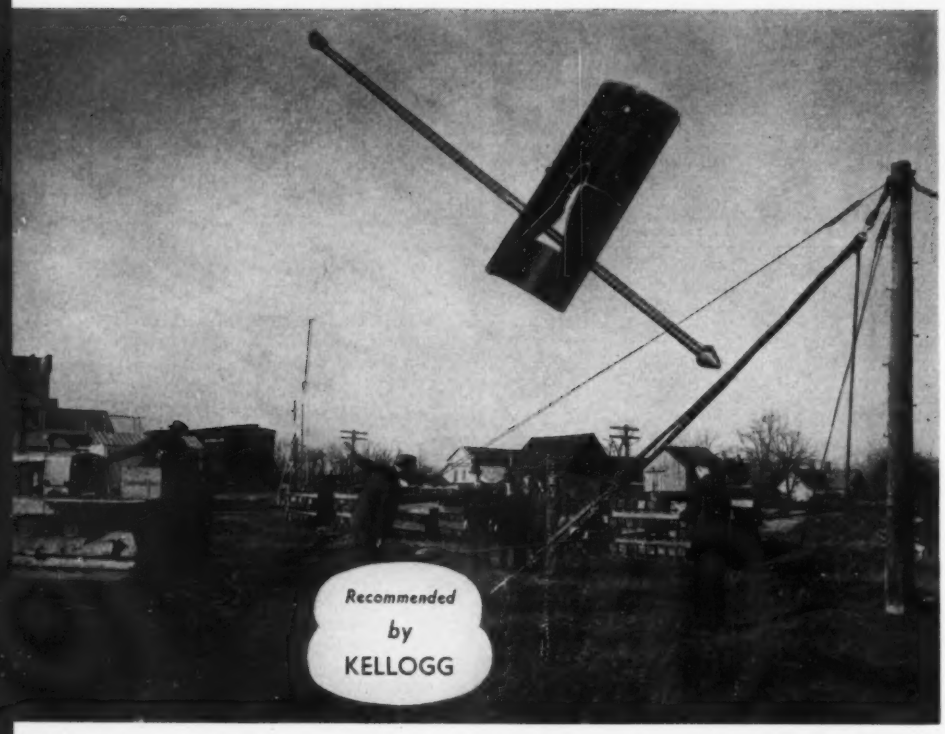

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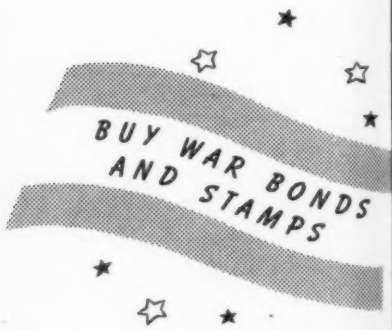

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SWITCHBOARD AND SUPPLY CO., CHICAGO

Utilities should have interest in plans and formulas calling for the Allied Nations to police the post-war world, which will definitely change business and economic relationships between the United States and other countries in Western Hemisphere, says Mr. Welch.

IT MAY SEEM a bit out of character for the Washington editor of a business publication such as TELEPHONY to comment on international developments. Yet, the telephone business and American business in general have such a tremendous stake in the political controls of the post-war world that your correspondent would be remiss in his obligation to faithful readers of this department if he did not bring certain happenings to your attention.

This is especially true in view of a highly significant event which has apparently taken place within the last few weeks. Like so many really significant developments, this item was buried in the press under sensational war news and has generally escaped notice. The reference is to Winston Churchill's speech on March 21 in the House of Commons in which he discussed post-war political organization of the world. It was more recently supplemented by the visit to Washington of Sir Anthony Eden, British foreign minister.

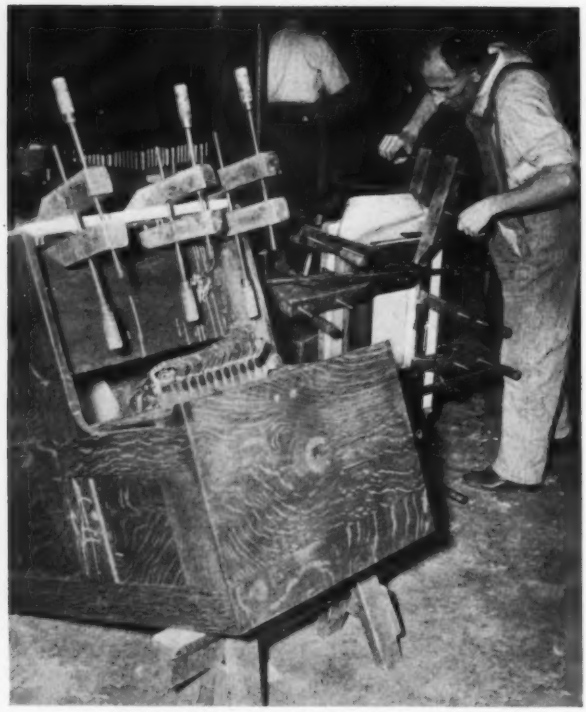
It is quite evident from Churchill's speech that Britain has made up its mind on how to police the peace. Presumably, Washington has agreed, or at least acquiesced, although the formula does not sound much like the idealistic theories of world-wide reform which Vice President Wallace was preaching a few months ago. However, Wallace has cooled off noticeably of late. The nice things he has said about capitalism recently would indicate that the *education* of Henry Wallace is coming along very nicely, or could it be that 1944 is drawing nearer?

Anyway, what Churchill said amounted to this: The peace of the world after this war is not going to rest on any such makeshift monstrosity as the League of Nations. It's going to rest upon the Four Great Powers. The four Great Powers are going to be Four Policemen, *each one of which will enforce the Four Freedoms as he sees fit in his own precinct.* The Four Powers are Great Britain, Russia, China, and our own United States. Britain will keep order in Africa, and also, with the help of Russia, keep Europe in line. Russia will control her own vast domain and the Black Sea region. China will take care of the Orient. The United States will look out for the Western Hemisphere, sharing with China the control of the Pacific. Of course, Churchill did not spell out the respective spheres of influence quite so bluntly. But when he proposed that "regional councils" do the effective policing of the peace which is to come, and when we consider the clearly inferred consequences of Eden's Anglo-Russian alliance of 1942, there is not much doubt about what the astute Prime Minister is driving at.

Such an arrangement will not please some people in this country who have an idea that right after the war we should embark on an international New Deal, prod the benighted Oriental into social consciousness, restrain the fractious elements of Europe, and otherwise redeem the world and reform everybody according to yardsticks and standards figured out in advance right here in Washington.

Churchill's remarks show quite clearly that these professional do-gooders are in for a disappointment. They will

(Please turn to page 70)



This old one-position switchboard is receiving a major overhaul which will make it good for many years of additional service.

The Duration

THE SWITCHBOARD is the heart of any telephone system and should always be maintained carefully. Good maintenance is most essential at this time to make certain that existing equipment will last for the duration with a minimum part replacement. It is imperative that the switchboard be kept clean at all times both inside and out. The most successful way to do this is by the use of vacuum cleaners and blowers, if available, on jacks, keys, etc.

The following points should always receive careful attention to insure proper operation and maintenance of any switchboard:

(1) Repair all worn *cords* daily. When cords have reached the end of their useful life, replace promptly.

(2) Clean and polish all *plugs* at regular intervals, using an approved plug polish. Never use an abrasive polish which will damage the plugs.

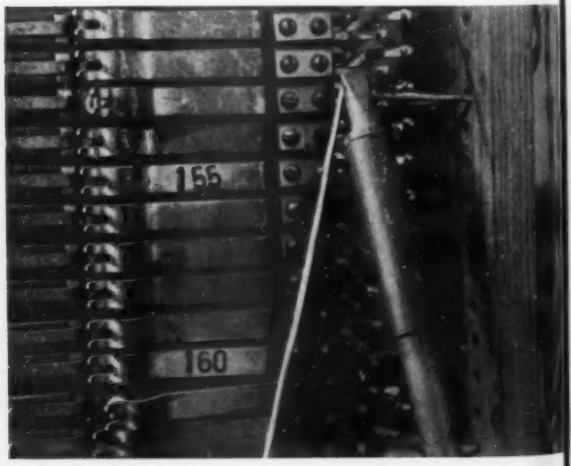
(3) Inspect and gauge all *plugs* and *jacks* at regular intervals. Replace worn jack strips and return to their manufacturer for overhaul. On magneto equipment replace jack thimbles.

(4) Always keep *relay covers* in place except when actually clearing trouble.

(5) Make periodic inspection and test of *all parts* of the equipment.

(6) Make an effort to detect *faults* and clear all *trouble*

Some telephones need only minor repairs, but thousand of others must be dismantled. Usable parts are then reassembled into good instruments.



Soldering well all connections in central office equipment is a good protection against costly trouble in apparatus and service later on.

...or Central Office Equipment

By **Ray Blain,** Technical Editor

promptly. Maintain a stock of repair parts for emergency use.

(7) When making repairs make sure that *workmanship is first class* at all times. Keep *wiring* and *cables* in their place. Protect the *insulation* of wiring at all times.

(8) Instruct operators in the proper manner of handling *plugs, cords* and *keys* in order that their maximum life may be obtained. (See article on page 25.)

The main frame should be carefully checked at regular intervals paying particular attention to the following points:

(1) Check all *wire connections* for loose joints.

(2) Repair or replace all defective *protector parts.*

(3) Check *heat coils* and replace all which show high resistance.

(4) Check jumpers and remove all not in use. Reuse old jumper wire when possible.

(5) Clean entire frame at regular intervals.

Careful maintenance of power equipment is a *must* during the present emergency. Make sure that ringing and battery charging equipment is in good condition at all times and that necessary repair parts are on hand. When motor-generator sets are used, remove brushes once a month and wipe brushes, brush holders and commutator with a clean, dry cloth. Lubricate all bearings carefully. Keep power panel clean at all times.

Commercial power supply these days is reliable and an auxiliary power source is not usually considered necessary. However, if you are located in a section of the country where the commercial power is not considered reliable then an effort should be made to obtain an auxiliary power source. Make sure that a sufficient battery reserve capacity is available to carry the exchange load during "blackouts" and other emergencies.

The manufacturers of storage batteries are all interested in the correct operation and maintenance of their batteries because they have learned that this policy insures maximum life and service.

At this time it is essential that conservation of battery material be carried to the maximum extent. There are three general methods of operation for telephone type storage batteries: (1) the float method; (2) the continuous variable current method, and (3) the cycle method. Explanations of these methods follow:

Full Float. The full float should be one of the easiest methods of operation and the general recommendation is that the battery be floated at 2.15 volts per cell. When floating a battery it is expected that the charging equipment will be adjusted for this voltage and connected to the battery for the full 24 hours of the day, seven days a

(Please turn to page 44)

Old type bell boxes awaiting repair. They still have years of good service for some customers who, otherwise, might not receive service.

A good wire chief's test set is always essential in locating trouble and keeping central office equipment in top operating condition.

Save the Surface!

Painting buildings, equipment and tools saves critical materials. All telephone companies should carefully inspect plant.

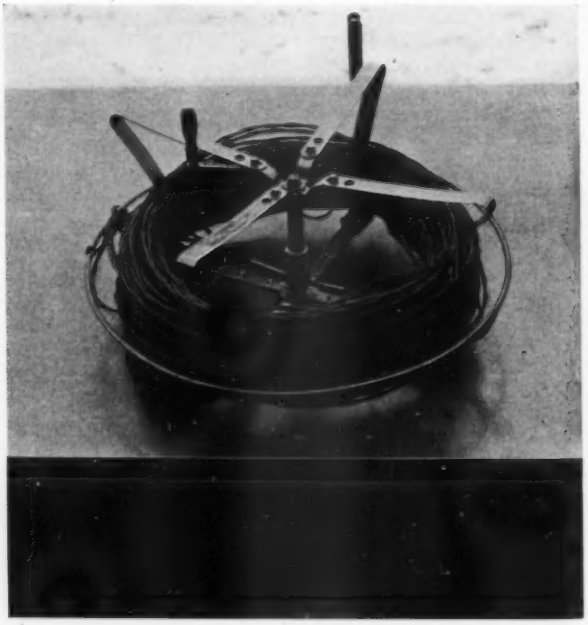
By JOHN GRANT

SOMEONE HAS said "Save the surface and you save all." While this may not be entirely true in all cases, we know that saving both inside and outside surfaces in the telephone exchange is an important necessity. This protection to telephone property is essential in times of peace but it is particularly vital in wartime when critical materials are scarce.

Recently when visiting a friend who was stopping at one of the leading hotels in Philadelphia, I noted a gang of painters working in one of the halls and remarked that this was unusual in wartime when manpower and materials are both critical. I was informed that this crew of painters work continually, which no doubt accounts for the clean and neat appearance of this hotel at all times. There is no doubt that it is far better and cheaper to spend a fixed amount for building maintenance than to spend nothing for several years and then clean up everything at one time. When the latter plan is resorted to paint will not only cost more but building repairs will be more extensive. Larger telephone companies, in general, have maintained their buildings and equipment with care, but many medium-sized and smaller companies neglect their property. The object of this article is to encourage proper building maintenance in all exchanges regardless of their type or size.

The advice of a professional painter is sometimes desirable, however, the smaller companies generally can handle

A good finish should be maintained on the woodwork of all switchboards both large and small. Note the newly painted walls and floor.



All wire reels should be kept painted at all times to prevent rust or corrosion and insure maximum life.

Trucks maintained in a well painted condition not only protects them but such action also builds public relations.

their own painting with the regular force at odd times. For the benefit of these companies we offer the following general instructions for cleaning and repairing surfaces which are considered necessary for long life of paint and for good appearance:

(1) A properly-prepared surface is a profitable rather than a costly procedure. Time and money spent for cleaning and preparation before painting will be paid for by the extra coverage, life and appearance of priming and finishing coats.

(2) The outside of buildings should be thoroughly cleaned by removing all loose paint and scale, rust, lime wash or water thinned paint deposits, oil, grease, loose dirt or dust by sweeping, wire brushing, scrubbing or washing.

(3) Clean oil or grease spots with wire brush, scrape and wash with naphtha or gasoline, exercising proper precautions against fire hazards. Then apply one coat of aluminum paint or alternate as a sealer to prevent bleeding or discoloration. This method is suitable for use on both interior and exterior surfaces.

(4) When painting over a water paint coated surface first remove all loose scale, blisters, dust or dirt until the surface is solid. Then apply a full bodied spray or brush coat of good sealer.

(5) For very porous interior surfaces as rough sand plaster, brick, concrete, wood, celotex, thurmax, masonite and other types of spongy composition wall boards, first prime and seal with a good sealing paint. For exteriors of this type of material, first prime with an exterior base coat primer, then follow with prescribed schedule of materials.

(6) For steel and metal surfaces first remove all rust, scale, loose paint, grease, oil and dust, then follow with a good and reliable metal primer and finish coat.

(7) For the painting of either new or old galvanized iron first clean or remove all foreign substances. Wash new metal with a solution of one pound sulphate dissolved in one gallon of water, apply with brush or sponge, then rinse with clean water. When clean and dry, follow with prime coat of a quality galvanized primer, then finish with metal paint.

(8) The surface to be painted should always be dry. Never attempt to paint over damp or wet surfaces or during foggy or wet weather.

(9) To insure best results always follow the direction of the manufacturers, as given on labels and thoroughly mix the contents of each package.

The above are only a few simple ground rules and should be modified and added to as required to meet local conditions. Next an attempt will be made to recommend various approved painting practices for the average telephone exchange.

The frequency of which repainting is required depends upon local conditions and the care exercised. Ordinarily the walls in an exchange may be washed from three to five times and in general repainting should not be required oftener than each four years. Naturally this life cannot be expected unless good paint is used. A good line of telephone exchange paints is advertised within the pages of this issue.

Color schemes and color combinations should not only be arranged in accordance with the tastes of the individual, but should be selected with a view of harmony as well. Cream color is ideal for ceilings and forms a suitable color combination with ivory tan walls. This color combination is usually satisfactory for operating rooms, terminal rooms, commercial offices, basements, corridors and private offices. Ivory ceilings with caen stone walls is also a good color combination for use in the exchange. Buff walls are also good for use in recreation and rest rooms. These colors are all light and reflect rather than absorb light, and they do not show dust.

When ceiling or wall fixtures are painted they should be in the same colors as the walls. Radiators should never be painted with aluminum or bronze as this reduces their heating efficiency about 25 per cent. Radiators or uncovered heating pipes should be painted with the same paint used on the walls. Mainframes and relay racks are usually painted with aluminum which is not easy to obtain these days. A suitable substitute which may be used to advantage for this purpose is an alloy silver paint now available (see page 64.) This paint produces an appearance similar to aluminum and its lasting qualities are excellent.

The pigment and vehicle are packed in separate containers so that the two may be mixed together on the job.

Any repair work to be done on surfaces to be painted should, of course, be completed in advance of the painting if possible. Repairs will usually consist of the following:

(1) When plaster walls contain cracks or holes which cannot be covered by paint, they should be enlarged slightly, loose plaster removed and moistened well with water. The cracks then should be filled with an approved patching plaster.

(2) Plaster walls on which old paint has scaled off must be cleaned and given a good coat of primer and sealer. This coat must be permitted to dry thoroughly before painting.

(3) Discolorations, hair cracks and "hot spots" may be treated successfully by an application of sealer and primer coat. Smoke, etc., which show stains in plaster should be given a coat of shellac after cleaning and before painting.

To paint plaster or concrete ceilings and walls, prepare the surfaces and apply the first coat of primer and sealer tinted with oil colors to match the finish coat. Before applying the finish coat inspect the surface and if any flat spots show up they should have a second application of primer and sealer. The priming coat is not required on surfaces such as sized muslin, sanitas or primed metal.

Tools such as pole jacks should be kept well painted.

The door and window sash and screen frames on even a masonary telephone exchange building should be painted at regular intervals.

The second application should be a split coat of one-half of the finish coat and one-half wall primer and sealer. Both paints must be thoroughly mixed before combining. The third coat should consist of the finish coat as it comes from the package.

The walls should be permitted to dry thoroughly between coats. Old walls when in good condition will not ordinarily require the first coat. Three coats, however, are normally required on all new walls. For enamel walls use a split coat of enamel and enamel undercoat for the second painting and use enamel for the final coat.

To provide enamel finishes on new wood, first apply an enamel undercoat thinned with oil or in accordance with the manufacturers' instructions. Permit this first coat to dry thoroughly and then fill cracks and nail holes with lead putty. The second coat should consist of equal parts of enamel and enamel undercoat thoroughly mixed. The third coat should be the straight enamel. It is a good idea to smooth the surface between coats with "00" sandpaper. On walnut, oak, chestnut or other open grained woods, the first coat should consist of natural paste wood filler, wiping off the filler before it sets. Rub across the grain in wiping.

On old wood surface which has been previously enameled or painted, sandpaper thoroughly smooth and apply an enamel undercoater. This coat should be thinned as indicated by the manufacturer. The necessary number of coats of the undercoater will depend upon the hiding power of each coat. If the old surface has been varnished it must be removed with an approved type of varnish remover. Then proceed in the manner as indicated for new work.

When wood floors are painted, two coats of floor enamel should be applied. The first coat may be thinned, but the second should be applied as it comes from the package.

New cement floors may be hardened and dust-proofed by an application of magnesium fluosilicate. Sodium silicate diluted one gallon to four gallons of water may also be used. This solution should not be mixed until ready for use. Five gallons will treat about 1,000 square feet, one coat, depending on the porosity of the concrete.

Concrete floors should be properly drained and thoroughly dry before painting. They must also be free from all dust, grease and dirt. Then apply two coats of floor enamel. The first coat may be thinned by adding one and one-half pints of linseed oil and one pint of turpentine, to one gallon of paint. The second coat should be applied full consistency. *However, turpentine should never be used in paints for apparatus rooms, operating rooms or where employes are stationed permanently as the fumes have a detrimental effect on the equipment and may hamper the breathing of employes.*

New battery rooms may be painted with two or more coats of fume-proof acid-resistant special battery room paint. The final coat may be enamel if desired as it permits ease in cleaning later.

Before attempting to repaint an old battery room the walls and ceiling should be treated with an acid neutralizing solution. This solution consists of one-half pound of baking soda added to a gallon of water. This solution should be applied to the surface and permitted to remain until all bubbling ceases. Then rinse with clean water and let dry and paint.

Outside surfaces should be thoroughly cleaned before attempting to paint. On woodwork coat all knots, sappy and pitch places with shellac. The prime coat should be thinned with pure boiled linseed oil so that it will penetrate. This coat should dry a week if possible. Ordinarily paint can be thinned as follows:

(Please turn to page 54)

CONSERVING LINE MATERIALS

By W. H. Martin

A good pole line properly guyed insures long life.

WAR ACTIVITIES have placed a tremendous traffic load on all communication systems everywhere. Even though this service is essential, telephone companies are often handicapped because of inadequate plant and the inability to obtain necessary tools and material. Shortage of critical materials makes it necessary that every effort be made to keep all replacements to a minimum. Strict compliance with this policy will provide more copper for ammunition and steel for ships.

Spring is usually the time for telephone companies to start their construction activities and rebuild all plant which has depreciated to a point where maintenance becomes too expensive or additional facilities are required. This year due to shortage of critical materials and the limitations of War Production Board Order U-2, construction activity will no doubt be reduced to a minimum. This will permit the utilization of men and equipment to overhaul existing plant to permit it to continue in service until victory is won. The object of this article is to indicate how this may be accomplished with a minimum amount of material.

The term *Preventive Maintenance* implies the anticipation of trouble conditions on telephone plant and their correction before actual trouble occurs. Sources of possible trouble must be detected by careful inspection of the plant at regular intervals. Some telephone companies may elect to inspect and repair in one operation while others, especially the larger companies, may find it more desirable to send inspectors over the system and make a written report of trouble conditions found and recommendations for their correction. Either method, if properly carried out, should prove entirely satisfactory.

Poles. It is considered highly desirable for all telephone companies to make a careful inspection of their lines and replace all weak or defective poles while it is still possible to obtain them. We all know that a broken pole swinging in the wind will in a relatively short period of time ruin the adjacent spans of aerial cable which it carries. In the case of open wire lines located in a medium or heavy loaded area a bad pole represents a weak spot and may result in the loss of the entire lead during a sleet storm.

Because of the present shortage of critical copper and steel it does not pay to risk the loss of valuable material when it may be prevented by the replacement of a few poles. Old poles may often be salvaged by cutting away decayed sections at either the top or butt as required. Decayed sapwood may be shaved off with a draw knife. The butt should be retreated before resetting. The reuse of salvaged poles having the probability of a short life is of course not economical in view of the high cost and shortage of labor and is recommended only when new poles cannot be obtained for replacement.

In many locations where existing wire or cable is in good condition and its replacement is not considered desirable or possible it may be necessary to replace a considerable number of old poles with new ones. This action may materially affect future planning and all such pole replacement should be engineered with care. Poles should be located only after the following points have been carefully considered:

(1) If an open wire line, what will be the ultimate number of circuits carried? Will the open wire be changed to cable at some future date? Will long-span construction be used when old wire must be replaced?

(2) Locate poles in such a manner that they will not require relocation at a later date should the line design be changed. This may be accomplished by the use of a work print, showing the proposed ultimate location of all poles. This plan should be used as a guide and locations selected at which new poles may be set—the distance between poles representing the spacing which will ultimately be required. Salvaged poles may be used at locations which will not be required in the ultimate line.

(3) The location of the line with respect to the center of the street or road should be considered to make sure that it will not interfere with future grading and road widening operations. When a large number of new poles are placed they should be set on the new line location if

the indications are that the line must be relocated at some future date.

Line Wire. When it is deemed necessary to replace a considerable amount of line wire steel or copper, steel wire should be used when possible to do so and still maintain satisfactory transmission. The line wire should be checked over carefully and all suspicious twisted sleeves or splices replaced by *compression type sleeves.* This action alone will improve the line both electrically and mechanically and also reduce the probability of trouble. Excessive sag should be pulled out of the line and all missing or loose tie wire replaced. Copper-steel tie wire may be used on a copper line with complete satisfaction. Broken, cracked or missing insulators should all be replaced. Often rusty line wire may be continued in service if all old splices are remade.

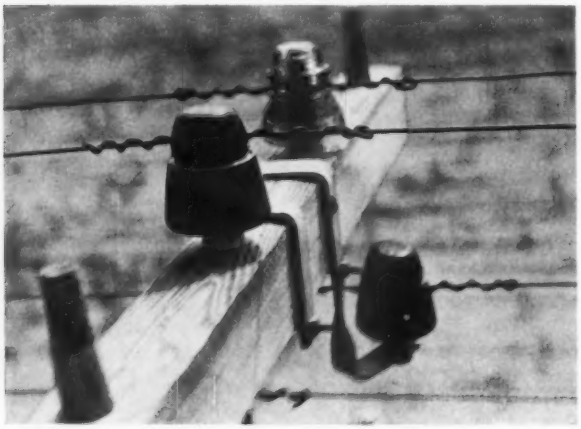
Cable. When aerial lead-covered cable has numerous defects such as ring cuts, crystallized spots and sheath cracks, replacement is normally considered necessary. Now, however, due to a shortage of critical material the useful life of cable in this condition may be extended considerably by effective repair. The arc soldering method of sheath repair which requires a minimum amount of tin-bearing solder may be used or the potential sheath openings may be protected by a covering of ordinary friction tape and P & B paint.

Friction tape is now being manufactured from reclaimed rubber. When a sheath opening must be made and a lead sleeve wiped on to effect repairs the so-called *Victory Joint* should be used as it requires only 10-15 per cent as much solder as the old type splice.

Drop Wire. Trees are deadly enemies of drop wire and this year extra clearance should be provided on all tree trimming jobs. Route all new drops so that they will clear trees by a wide margin. Often damaged insulation on drop wire may be repaired by the use of tape and paint. When this is not possible, remove the defective spot and splice. *Compression type sleeves* may be used for this purpose.

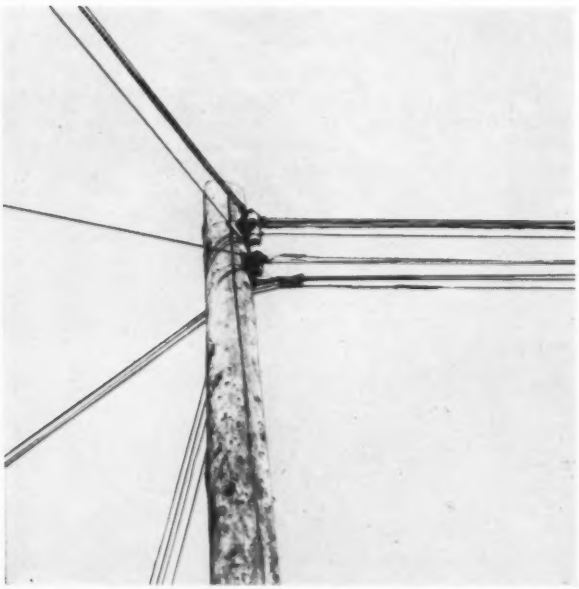
Crossarms. Repairs to crossarms are not ordinarily con-

(Please turn to page 34)

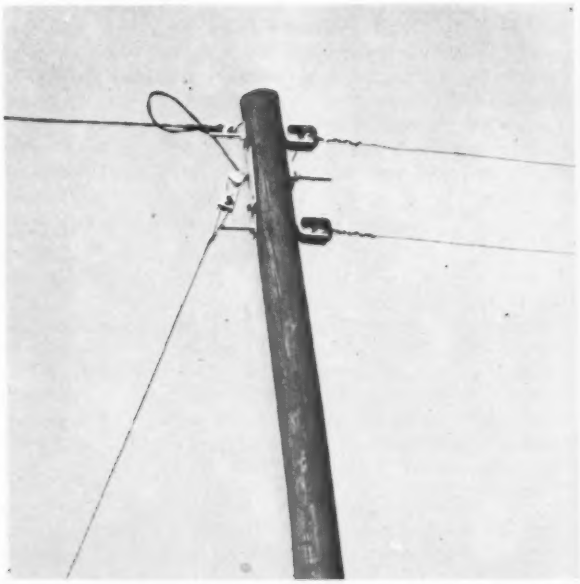


Tie wires should be properly made so as to hold the line wire in the groove of the insulator.

Old material should be turned into junk when it can no longer be used for any useful purpose.



Drop wire should be pulled to the proper tension and attached to the approved type fixtures to insure maximum life.



A good deadend where line wire connects to the drop at a farm line telephone station.

Operators Protect Equipment

By MAYME WORKMAN
Traffic Editor

ARE YOU a perfect operator? Do you always handle your equipment in the prescribed manner? If so *don't read this article. It is not intended for you.—Stop Here!* This topic has been prepared primarily for switchboard operators who have a sincere desire to do a good job of handling their equipment in the prescribed manner, but occasionally fail to do so for some reason or another.

The proper handling of equipment has long been recognized as an important function of the traffic department. The student operator in her initial training period is instructed in the correct usage and care of the tools she will use in her work as a switchboard operator, such as *cords, plugs, keys, dials, and the headset.*

When the student is assigned to a regular operator's trick, any necessary additional instruction or coaching in the proper handling of equipment is administered by the supervisor or chief operator. Supervisory employes are invested with the responsibility of seeing that established routines and practices for the conservation and protection of equipment are followed.

Generally speaking, operators are familiar with traffic routines which will be covered in this article. However, at the present time a review is in order for the following reasons:

(1) *Conservation of Equipment* is a wartime necessity.

(2) *Replacements* are difficult to secure due to shortage of materials.

(3) *Abnormal increases in traffic* result in additional wear on the equipment. Peak loads in traffic also have a tendency to foster careless handling of equipment, particularly cords and timing devices.

(4) *Durability of substitute materials* in many cases do not have the same wearing quality and must be replaced more frequently. This has been particularly noticeable in calculagraph ribbons.

(5) *Induction of new people into operating forces,* who, in some instances, lack sufficient experience to enable them to appreciate the importance and need for handling equipment in the prescribed manner.

While the main theme of this subject is the traffic department's responsibility in the proper care and use of equipment so that its life and usefulness may be prolonged, switchboard maintenance is so closely related to this topic, reference will be made from time to time to cer-

tain functions of the plant department in keeping the switchboard and other equipment used by the traffic department in satisfactory working condition.

At this point it is well to stress the importance of harmony and cooperation between the plant and traffic departments. The chief operator who makes a sincere effort to do her part in creating good-will between the two departments will usually have no difficulty in keeping her equipment in good working condition. On the contrary, the chief operator who is always ready to blame the plant department for all service criticisms can hardly expect to receive their cooperation. At the present time, with many of our plant men serving their country in the armed forces, chief operators should be especially tactful, patient and tolerant in their contacts with plant employes. They have their employment and training problems too.

Switchboard Cords and Plugs. The maintenance and replacement of switchboard cords and plugs is governed to a great extent by the operator's care and use of this equipment. It has been observed that in exchanges where a special effort has been made to develop proper cord handling and use of plugs, there was a noticeable decrease in the number of cases of trouble reported.

A traffic supervisor employed by one of our larger Independent telephone companies in Illinois volunteered this information. *"We have been making a special effort to develop correct cord handling in one of our larger exchanges and we were pleased to have our switchboard repairman report there has been a noticeable decrease in the number of cases of cord trouble reported. He complimented us on our efforts, stating, 'Keep up the good work and I will do my best to see that cords needing attention are repaired promptly'."* The writer has often wondered what a switchboard repairman's reaction is when he sees an operator jerk down a cord, drop it on the keyshelf, or push it in the jack with the palm of her hand, particularly at this time when, in many plant departments, there is a shortage of labor, material and the problem of inexperience.

One of the most harmful effects on plugs is the operator's failure to slightly rise up from her chair when establishing connections on high reaches, thus placing undue pressure upon the plug, frequently bending its tip.

In establishing connections, operators should grasp the plug by the shell and insert it in this manner. It should not be pushed or shoved in the jack with a finger or palm of the hand. In taking down a connection, the operator should also grasp the plug by the shell and trace the cord to the socket. *Never* disconnect a plug by jerking it out by the cord.

On long reaches, the operator should signal the adjacent operator to disconnect for her by alternately tightening and slackening the cord. *Do not* disconnect a cord for an adjacent operator unless she signals you to do so as this action may result in a cut-off.

Switchboard plug maintenance is an important element of service maintenance as it is the center of the operating traffic. It is also important because of the fact it reduces service criticisms, thereby promoting more pleasant customer relations.

Switchboard plugs should be kept clean, free from tarnish, grease, acid and dirt in order to assure good transmission. Dirt is not always visible to the eye but when a plug begins to become dirty or tarnished it causes a slight scratchy noise. This is a warning signal that the plug should be cleaned. If the condition is allowed to continue it will result in transmission loss sufficient to impair the efficiency of the connection.

Plug cleaning periods vary considerably in different areas and during different seasons of the year. For example, in areas where the air is polluted with smoke and dirt of industrial plants and mines, plugs may need cleaning at weekly intervals while in other areas infrequent intervals are sufficient. Cleaning is necessary more frequently during the warmer months of the year than during the colder months.

Switchboard operators can, and probably should be instructed in the proper method of cleaning plugs. Where this work is performed by traffic employes it is usually assigned to the night operators. Before assuming this responsibility, the chief operator should confer with the plant department to determine the method of procedure and proper material to be used in cleaning plugs.

Dropping plugs on the keyshelf is harmful to the equipment, creates unnecessary noise and, when coming in contact with supervisory signals, chips and mars the opals making them less effective, eventually necessitating their replacement.

The Operator's Headset. When the headset is not in use it should be wrapped in the prescribed manner and placed in the headset compartment or receptacle provided for it. Headsets should not be thrown on chairs, couches or tables in the rest room. A headset should never be worn or taken out of the central office.

Operators should refrain from swinging or knotting headset cords, dragging plugs or dropping them on the floor. All of these actions have a detrimental effect on the equipment.

Tie strings on the transmitter, receiver and plug should be kept tied to relieve strain on the conductors of the cord wherever it is connected to the terminals, thus reducing the possibilities of cut-outs.

Every operator should have an individual headset and use it at all times except when it is being checked or repaired by the plant department.

Operator's telephone sets should be inspected regularly by the plant department in order to keep them in good working condition. This routine inspection is frequently neglected in telephone exchanges.

The operator's telephone equipment is the medium with which the operator renders quick and satisfactory communication service to telephone customers. It enters into the quality of every call, therefore it is highly important that this equipment be kept in good working condition by proper care on the part of the operating force and routine inspection and maintenance by the plant department.

Defective headsets should be reported by the operator as soon as the trouble occurs and should be taken out of service immediately to avoid service difficulties.

Some of the common headset troubles are: *Frayed cords; defective plugs; untied strings; dented transmitter case; defective horn socket; foreign material on the transmitter; loose receiver cap; rusty, bent, dented or reversed receiver diaphragm; broken or damaged receiver cap; loose, missing or defective parts.*

Timing Devices. Perhaps the most frequently abused equipment in the traffic department is the calculagraph. Levers are jerked unnecessarily resulting in additional wear and tear on the equipment. It is reasonable to assume that difficulty will be encountered in the future in securing replacements for worn parts, therefore it behooves every employe in the traffic department who has occasion to use this equipment to handle it with care. It is not necessary to jerk the levers or place undue pressure upon them to secure a clear and legible timing stamp on the toll ticket. Move the levels gently, back and forth and, if your calculagraph ribbon is in good condition, you will have a clear, legible imprint on your ticket.

Rate and Route Books. Have you observed operators tracing a rate across a rate sheet with a pencil? You probably have and the result is that the rates soon become illegible

and the sheet will have to be replaced. The proper procedure is to use a toll ticket in tracing a rate. This will assure accuracy and will prevent marring the rate sheet.

Careless tearing of rate and route sheets should be avoided. Necessary replacements due to wear and tear mean using essential material—paper.

Tariff or Rate Material Binders. Due to scarcity of metals, replacement binders complete with metal parts, for tariff or rate material furnished by the A. T. & T., no longer can be obtained from the manufacturer. Only a limited supply of binders is on hand and every effort should be made to lengthen the life of those now in use.

Spiral Ticket Holders. This essential equipment, so important in timing long distance calls accurately, is becoming very scarce. A large Independent operating group company in making an inventory found they had exactly nine new spiral ticket holders in all of the exchanges in their four respective states. If a spiral becomes loose, ask your switchboard repairman to solder it back in place. *Do not* drop cords on your spiral ticket holders. Treat them as carefully as that last pair of nylon which is such a cherished possession these days.

(Courtesy, THE MONITOR)

Typewriters and Calculating Machines. If you have such equipment in your department, remember it must last for the duration and we are unable to estimate how long that will be.

Sleeves used on cords and keys as a reminder to take some specific action should also be conserved. In the past many sleeves have been lost by dropping or rolling on the floor with no effort made to retrieve them. It may be difficult and perhaps impossible to obtain this equipment when your present supply is exhausted.

Toll Tickets should not be wasted or used for scratch paper. Incorrect entries should be ruled out and the original ticket used.

Neckband Tape. Many operators will remember the days when neckbands were laundered instead of discarded when they became soiled. This is probably a good time to revive this practice.

Directories should not be distributed promiscuously. Information directories should be handled with care in order that they may remain usable for the directory period. This also applies to intercepting, street address, and other records used in the Traffic Department.

Signal Plugs. Worn signal plugs should be rehabilitated and placed in service.

Pencils. Where automatic pencils are provided, treat them with care. They, too, will probably have to serve you for the duration. Ordinary pencils should be kept in service as long as possible.

Peg Count Meters. If you are using the type of meter which is placed on the keyshelf on peg count days, protect it from unnecessary wear and tear insofar as possible. It may soon be classified as irreplaceable equipment.

Ringing Keys. In operating a ringing key, pull the lever toward you, being careful not to pull it to either side. Do not permit a key to snap back into place.

Keyshelf. Do not mar or deface the keyshelf. Refrain from defacing designation strips, information posted on bulletin holders, etc. Personal belongings should not be kept or placed on the switchboard. Regardless of the size of the exchange, ice cream sodas and drinks of all kinds should not be placed on the keyshelf. Serious injury to the equipment will result if all or a portion of this liquid is accidentally spilled or upset on the switchboard.

Destruction of Records. Before destroying any traffic records, be assured that these records have been retained the specified period of time in accordance with the rules governing the destruction of records prescribed by the Federal Communications Commission and state regulatory bodies. If in doubt, consult your manager.

Rest Room and Office Furniture. This equipment may have to serve for the duration and should be treated accordingly. If you have had occasion to shop recently for such articles as floor and table lamps, rugs, chairs, etc., you will know that stocks are limited and prices are high.

Electric Fans. Electric fans should be kept oiled during the period they are in use. When they are stored, they should be cleaned and wrapped to keep off dust.

Economic Use of Supplies. This is also a wartime "must." They, too, come under the category of essential equipment. "*Waste not, want not*" is still a timely proverb.

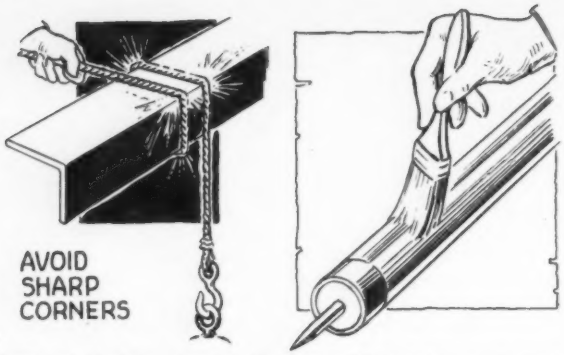
The problem of securing sufficient supplies of all kinds is becoming more and more difficult. This is especially true of stationery and office supplies. Existing materials must of necessity be used for the war effort and it becomes a patriotic duty and an economic necessity to carry measures for conserving materials to the limit.

Heat and Light. Too frequently central offices are not properly heated and ventilated. Many central offices are kept too warm for health and comfort, and the contrast between the outdoor temperature and that maintained in the operating room is too great. Chief operators should give careful consideration and supervision to the temperature maintained in their department, not only from a health standpoint but also because our government has requested us to conserve fuel to aid in the war effort.

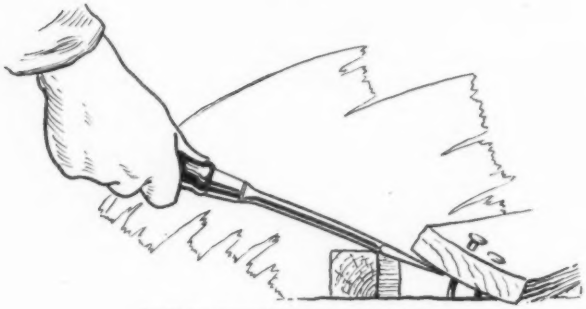
Lights should be turned off when they are not needed. To continue burning them is wasteful.

If every traffic employe in central offices throughout the nation will do her and his part toward the conservation of equipment and economical use of supplies, this will be a tremendous contribution to the war effort. Conservation is a wartime virtue. Let's practice it!

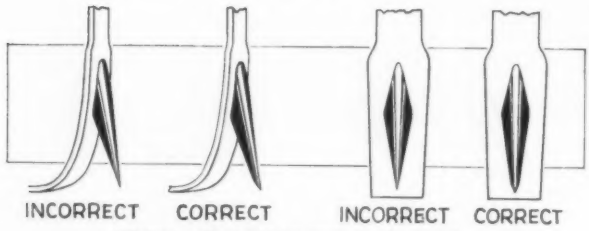
Make Your Tools Last Longer



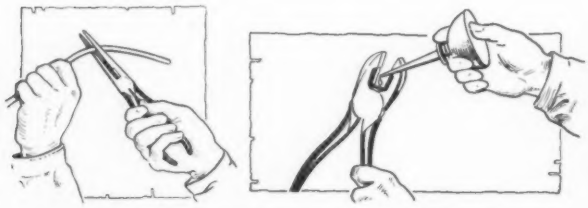
LEFT: Avoid sharp corners with rope. RIGHT: Paint or oil wooden handles.



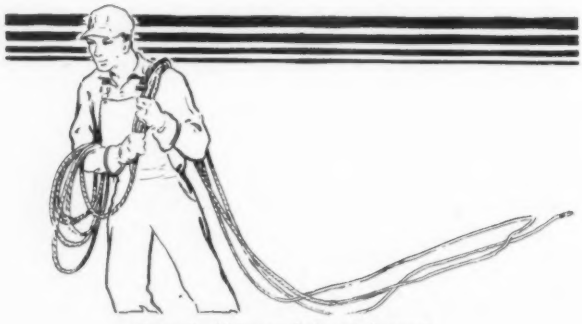
Don't use screwdriver as a pinch bar.



Climber gaffs should be properly sharpened.



LEFT: Don't bend too stiff a wire with pliers. RIGHT: Oil pliers occasionally.

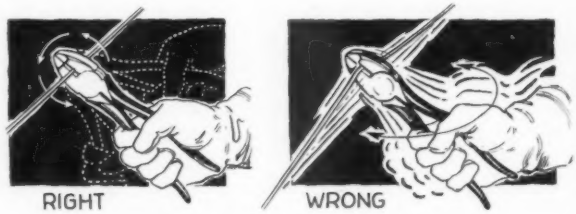


Rope should be carried—not dragged.

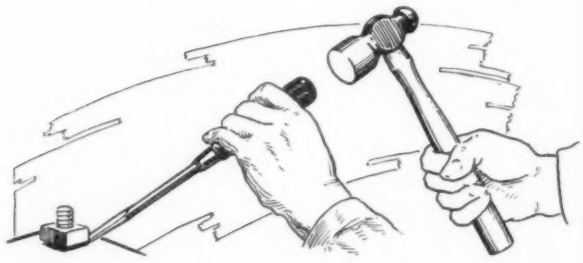
TOOLS ARE a real necessity in the telephone exchange and the manner in which they are maintained determines to a great extent the length of their useful life. Undoubtedly, the supply of tools available for purchase in the future will be materially decreased and many now being used will have to last for the duration. The object of this article is to point out a few maintenance methods which, if observed, will insure maximum life and service of all tools now in use in any particular exchange.

Pliers. Good pliers are an important tool as well as an expensive one and their proper care is most important. When good pliers are broken or damaged, it is usually due to carelessness on the part of the user. Pliers should never be used as a substitute for a hammer or wrench.

When steel messenger is to be cut, a file should be used to nick it. When pliers are used for this purpose, never rock them to either side as this places a terrible strain on the cutters. The best practice is to rotate the pliers on the wire in a direction 90 degrees to its length. Never drop pliers from a pole as it may break or crack them and may result in getting grit into the joint. Small pliers such as



Cut wire at right angles—Don't rock.



Don't use screwdriver as a chisel.

By **J. D. HOLLAND**

long noses and diagonals should never be used for work other than that for which they were intended. A drop of good oil in the joint of pliers occasionally will keep them in good working condition.

Lineman's Belts and Safety. To insure maximum life of leather it should be exposed as little as possible to water, heat, acids and mineral oils. When leather has been soaked with water, never attempt to dry it rapidly with a high heat, but rather dry slowly at average room temperatures. Further protection should be provided by applying a thin coat of pure neatsfoot oil to the under or grain side of the leather while it is in the process of drying. Washing occasionally with saddle soap is also an excellent preservative for leather.

Climbers. Modern climbers are of such high quality that any damage caused to them is also usually due to carelessness on the part of the user. Climbers should never be tossed into a truck with regular tools as it may cause injury to highly tempered steel used in the gaffs. The gaffs may be protected by small leather keepers if considered desirable. Linemen should never walk for any great distance with climbers on as the gaffs may be damaged by striking rocks or other hard objects. Never file gaffs without proper instruction and always use a gauge specially designed for this purpose. Neither should a lineman climb a ladder with climbers on.

Ladders. Handle ladders with care to prevent marring or chipping. Paint should never be used on ladders as it adds to their weight and may hide a defect. The wood in ladders may be preserved by covering with a mixture of one-third turpentine and two-thirds boiled oil. This mixture will feed the wood fibre and a hardening effect will form on the surface.

Safety Chain Hoists. The chain should be kept clean and well lubricated at all times. Grease bearings regularly in accordance with the manufacturer's directions. When hoists are not in use, make sure that they are properly protected from dust and dirt. Care should be exercised not to damage a truck by overloading.

Shovels. Digging tools should be thoroughly cleaned after each time of use and if stored for any length of time between jobs they should have all of the metal parts oiled. The handles should be treated with the same mixture as recommended for ladders. When a shovel handle breaks, the blade should be saved and a new handle installed later.

Wire Grips. Necessary precautions should be taken to keep the slots in the jaws clean of grease and the galvanized surface which scrapes from wire. Emery cloth is recommended for cleaning jaws. When grips are dropped into mud they should be cleaned immediately. A few drops of light machine oil on the bearing surfaces will keep the grips working smoothly.

Block and Tackle. This equipment should be kept dry when possible. Blocks with roller bushed sheaves will operate better without lubrication. Never drop blocks from a pole. Avoid overloading block and tackle and inspect carefully each time used.

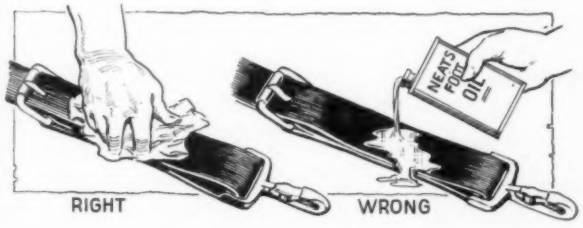
Bolt Cutters. These tools are most useful in the telephone exchange and if properly used will give long years of service without trouble. The effective pressure at the tip of the cutting jaws is multiplied 60 times and at the heel 120 times. Strain on the cutters may be reduced by starting the cut at the points and then moving it toward the jaws to finish. Heavy wire should always be cut at right angles. If a cut is made at an angle, there is a possibility of springing the jaws. Joints and bearing surfaces should be kept clean and well lubricated.

Star Drills. These drills may become jammed in a hole because of a lack of rotation while hammering. The drills should never be struck on the side to release from jamming. Dull drills should be resharpened immediately.

Wire Strippers. If maximum life and service is to be expected, never attempt to strip wire larger than specified for your particular stripper. The cutting blade is intended for copper wire only and should never be used on any other type.

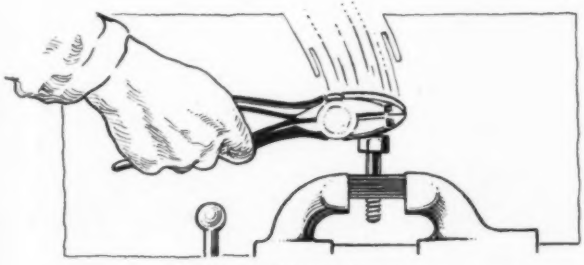
Rope. Inspect all rope frequently for frayed strands, broken yarns and acid stains. Twist open the strand slightly and check for powdered fibre which is a warning of internal wear. When a strain is placed on a kinked rope the fibres within the strands are weakened. Kinks should

(Please turn to page 40)

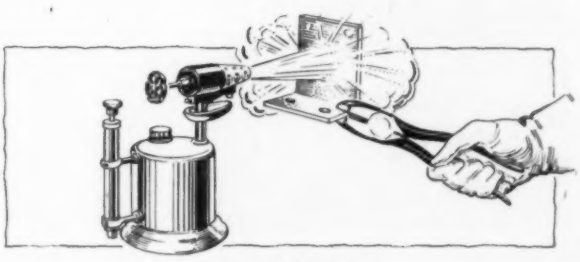


Oil leather occasionally—don't flood.

Don't subject leather to heat.



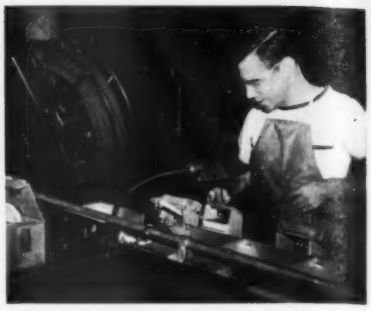
Don't use pliers as a hammer.



Don't heat pliers.

About half of this drop wire is re-usable and will go back into service.

All workers should conserve leather by resewing gloves which have broken out at the seams.



Splicing short lengths of all drop wire so that it may be used over again.

CONSERVE, SALVAGE, REPAIR

LEIGHTON H. Peebles, director, Communications Equipment Division of the War Production Board, states: "Supplies on hand, new and used, must be utilized to the fullest possible extent before buying more."

This good advice should be observed by telephone people everywhere as it will contribute much to the winning of our victory. The following suggestions are offered as an indication of what can be done when a real effort is made:

(1) Save canvas cement bags and return for credit.

(2) Anchors when recovered should be cleaned, straightened, welded and repainted.

(3) Salvage zinc casing and brass clips of dry cells and sell for junk.

(4) When old storage batteries cannot be repaired by cleaning and installing new separators and parts, salvage the lead parts for junk.

(5) Short lengths of switchboard cable can often be used to advantage by removing the outer braid and utilizing the pairs of wire for various purposes around the exchange.

(6) Star drills even though old and broken can generally be overhauled by a good blacksmith.

(7) Old fire extinguishers can be thoroughly cleaned and the defective parts repaired.

(8) Old files may often be cleaned and again made serviceable by the use of acid or sand blast.

(9) Furnaces and blowtorches may often be reused by

(Continued on page 34)

Junk, but some of it, literally worth its weight in gold, will be processed and used again.

Sorting dismantled relay springs and recovering bits of metal for smelting and re-use.

Old booths may be torn down and refinished to give many years of additional service.

NOW YOU CAN APPLY AA-1 RATING TO ORDERS FOR ESSENTIAL MATERIALS

War Production Board Order U-3 now permits telephone companies, under certain conditions, to apply AA-1 rating to orders for essential telephone maintenance and repair parts and, in addition, to assign CMP symbol to materials controlled by CMP regulations.

All telephone men are urgently requested to study Order U-3 and the splendid interpretations and clarifications provided by telephone associations and trade publications. The Leich Organization will be happy to supply you with copies of Order U-3 and assist you in every possible way to "keep 'em talking."

Address

LEICH SALES CORPORATION
427 West Randolph Street
Chicago, Illinois

(Concluded from page 30)

a careful overhaul and a replacement of a few inexpensive parts. Leaking tanks can generally be soldered.

(10) Leather gloves may often be saved by resewing the seams.

(11) Saws can generally be reconditioned by setting the teeth and filing. This will also be found much cheaper than buying new ones.

(12) Arrange with manufacturer to rebuild telephones and repair transmitters and receivers.

(13) The blades of screwdrivers should be dressed and re-shaped at regular intervals.

(14) Grind and file shovel points when they become rough and dull.

(15) Old axes can be reconditioned by replacing handles and grinding the blade.

(16) Confer with manufacturers on the possibility of rebuilding main frame protectors.

(17) Repair and install new stubs in old cable terminals which often makes them as good as new.

(18) Paraffin and beeswax may be heated, the top poured off, leaving the dirt in the bottom of the vessel. This cleaned material may be reused.

(19) Testing instruments such as meters are not procurable although the manufacturer may be able to repair the old.

(20) Never remove lags from cable reels until ready to use and always replace lags before storing. Seal ends of cable when a length is cut off to prevent damage and waste.

(21) Burning insulation from wire is not a good practice in these times of critical material shortages. The rubber insulation should be removed and saved. Insulation may be removed by pulling the wire through toothed or corrugated wheels to crush it. Such a machine can be fabricated locally after some experimentation.

This information is well known to most telephone men and to them it will only serve as a reminder. We must not waste precious metal which is required to keep our guns going. Let's all work to make what we have last longer and by so doing bring nearer a complete and lasting victory.

Conserving Line Materials

(Concluded from page 24)

sidered desirable, but they must be replaced when defective. Often the pins in a crossarm will break or rot and when this happens replacement of the pins only is required. On newly treated crossarms a reduction of creosote from 12 to eight pounds per cubic foot net retention will result in a saving of 33⅓ per cent.

Guys and Anchors. Patent anchors seldom develop trouble and rarely need to be replaced. Log anchors, however, often fail and in this event replacement with a patent anchor usually proves desirable. Abandoned anchors and rods may be dug up and reused, when cheap labor is available.

Guy strand should be replaced when required. Guy clamps should be checked and bolts replaced when necessary. The wrap around the pole should be examined and replaced by an eye-bolt when considered necessary. When guy clamps are not available the old fashioned wrap serve of the strand may be used successfully. Guy guards should be straightened and painted if necessary.

Pole Line Hardware. Metal is critical so hardware of all kinds should be recovered and saved for reuse. Bolts may be cleaned with a wire brush, straightened and the threads rerun if necessary. Paint all rusty spots with *rust preventative paint* (see page 64) or regalvanize. Bolts of nonstandard lengths may be saved for special jobs or cut to standard lengths and rethreaded. Eye-bolts may be reconditioned in a similar manner.

Crossarm braces should be cleaned, straightened and painted with *rust preventative paint* or regalvanized. Wood crossarm braces are now available and may be used when the metal variety is not available.

Ground rods may be recovered, cleaned and straightened for reuse. Clamps or other missing parts should be replaced and if driving end is mushroomed it should be ground to a slight taper.

Fixtures such as back braces and transposition brackets may be straightened and overhauled for reuse.

Broken or odd lengths of clay, fibre or transite conduit should be retained for use on repair jobs. Metal conduit should be cut to serviceable lengths and retained for future needs.

Insulators, porcelain and glass, including knobs of all kinds when coated with dirt, paint, soot, etc., may be cleaned by soaking in a solution of six ounces of Trisodium phosphate to a gallon of water, heated to 165 to 190 degrees F. The insulators should then be rinsed in warm clean water and wiped dry with a cloth. A considerable saving may be realized by the reconditioning of old insulators in this manner.

Messenger strand should be checked and if it is seriously weakened by rust or corroded by smoke it should be replaced. Cable rings should be replaced or respaced as required. Check all splices in cable to make certain they are lashed properly to the strand. Check bonds and ground connections to eliminate possible damage due to accidental power contact or spring lightning.

Cable terminals should be inspected at regular intervals. The face plates should be cleaned and all terminal nuts tightened. Make sure that the cover fits properly to prevent the entrance of moisture during storms. Disconnect all dead drop wire. On protected terminals check the ground connection and also make certain that protectors are in an operating condition.

Open all manholes in the underground system, clean out and make sure that drains, when provided, are operating properly. Check bonds and see that cables are racked properly. Cracked or broken covers should be replaced. On new construction concrete and wood covers will be found suitable for some locations.

Conclusion. It is not claimed that the items mentioned here represent all materials which should be conserved, but they are offered as a guide only, and to indicate the possibilities of a definite maintenance plan. It has been said that the best way to save large amounts of critical material is to use small amounts of such material in advance to prevent breakdowns which will require the use of a large amount of material for repair. In other words, repair the small leak in the roof on a dry day so that we will not have a large leak to contend with on a rainy day. In the telephone business this is known as *Preventative Maintenance.*

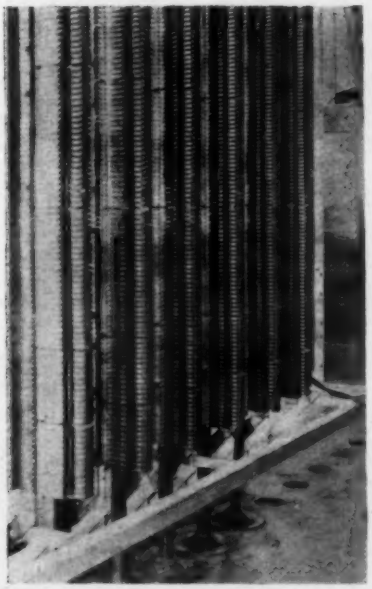
Maintenance Kinks

For Wartime Protection of Telephone Plant

By RAY BLAIN, Technical Editor

SUBMARINE CABLE SPLICING: This photograph of submarine cable splicing was sent in by Charles F. Robinson, telephone engineer for the U. S. Army Signal Corps in Atlanta, Ga. On this job the armor wires were welded together which is much neater than the usual wire serve. The photograph shows the plant men replacing wire armor ready for spot welding.

AERIAL CABLE CONSTRUCTION: The above photograph indicates how bends develop in aerial cable as a result of pulling messenger strand too tight. The vibration of the strand will then be concentrated in these bends and the sheath will crystallize. It is true that a tight messenger presents a better appearance than a slack one on aerial cable, but the slack one is much easier to maintain.



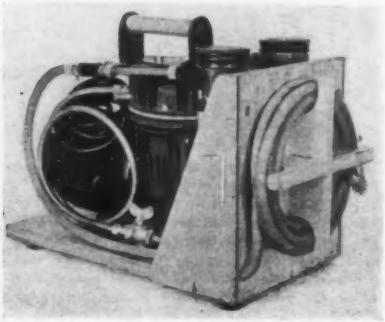
CABLE FINISHING: Cable splicers devise numerous methods to protect cable where it enters the floor under a main frame. The above photograph indicates one method which has proved entirely satisfactory, and a very neat appearance can be attained with this procedure. Note the lead sleeves around the cable for protection where it comes through the floor from the vault.

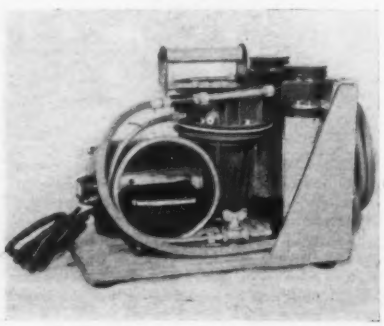
SPECIAL STEEL EXTENSION ARM USED IN REPLACING WIRE: To conserve precious copper, the Pacific Telephone & Telegraph Co. removed 600 miles of heavy copper wire and replaced it with a smaller gauge and thereby recovered a total of 157,200 pounds or nearly 79 tons of copper. The wire removed from the pole line on which it had served during the last decade was 165-gauge, heavier than now required on that particular lead, so it was replaced with 104-gauge copper. Another toll lead required the heavier wire and the net effect of the rearrangement was to add a total of 39 long distance circuits to the East which will contribute much to our total victory. The group of four wires to be removed was untied on about 40 poles at a time and moved out on the special extension arm shown in the photograph with GLENN I. BUZZARD, who developed it. The new wire was then attached to the old one and pulled out from a reel mounted on a flat bed truck. At the end of each day, a cable reel loaded with the recovered wire was delivered to a repair crew for inspection and reconditioning. The crew replaced the twisted sleeves with a compression type and wound the wire into standard coils. Each day the crew inspected and reconditioned about 2½ tons of the wire.

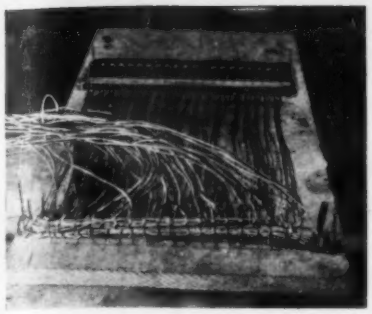
SALVAGING ODD LENGTHS OF WIRE: Wire which might ordinarily go into the scrap heap may now be salvaged by the use of compression type splicing sleeves which are as strong mechanically and as good electrically as the wire itself. With the aid of the vice arrangement shown above, the wire may be spliced quickly and easily. The splices are very little larger than the diameter of the wire itself so, after splicing, the wire coils easily.

TRENCHING MACHINE: When a large amount of underground cable is to be installed in an open area the use of a trenching machine, either on a rental or contract basis, will usually prove desirable. The only exception to this is in locations where numerous underground obstructions and utilities makes hand-digging more desirable.

CABLE TESTING AIR COMPRESSOR: Due to the present shortage of containers for nitrogen gas to be used for cable testing the small electrically-driven air compressor shown in the accompanying photographs (below) has been designed and may be successfully used as a substitute for gas pressure testing. This compressor is of the diaphragm type and supplies oil-free air of the desired pressure. This air is then forced through a glass cartridge filled with a special chemical to remove the moisture content. This chemical changes color when it is loaded with moisture and needs reactivation. When one cartridge becomes exhausted and needs reactivation the air is diverted to the reserve cartridge by simply closing a valve. The exhausted cartridge is then reactivated by simply heating in an oven. The compressor is also equipped with a pressure relief valve which releases at 15 pounds. This safety feature is considered necessary to avoid possible injury to cable or equipment by building up too high a pressure. The entire compressor unit is packed in a strong plywood case which is convenient for hauling in a truck and for use on the job. The case also contains two spare refills of the dehydrating agent together with necessary fittings and a pressure gauge. It will be noted from the photographs that the length of hose is carried on a small reel on the end of the unit. It is believed that this small inexpensive unit will prove most useful for the pressure testing of telephone cables.

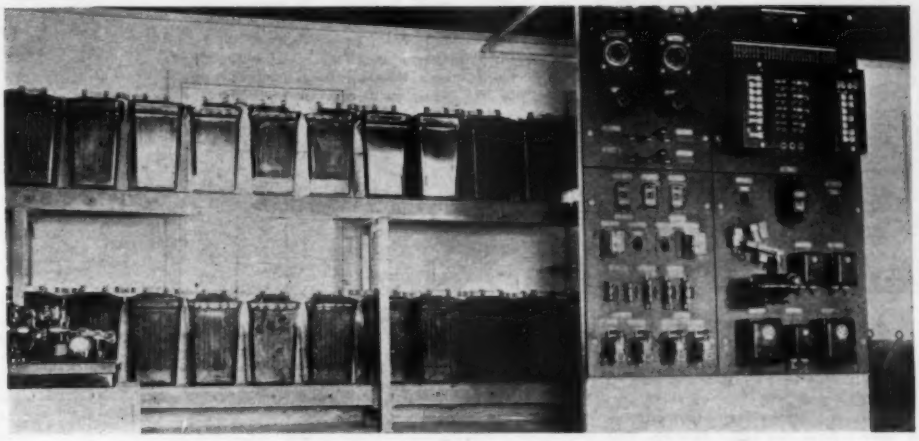






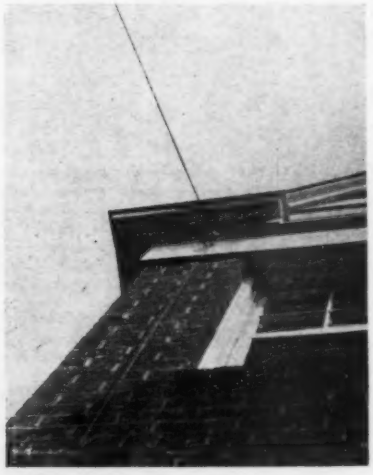
MULTIPLE JACK CABLING: Contrary to general belief, the cabling of jacks in a manual multiple switchboard is not a difficult task. The above photograph indicates how the wiring plan may be laid out on a board with the aid of a few common finishing nails.

CABLE SPLICING: Due to the present shortage of critical material, cable splicing should be performed with extreme care. The so-called "Victory" splice, if properly made, conserves precious tin-bearing solder. The sleeve shown in the picture (right) is entirely too large for the small cable being spliced. A smaller sleeve also requires less solder for wiping the splice.

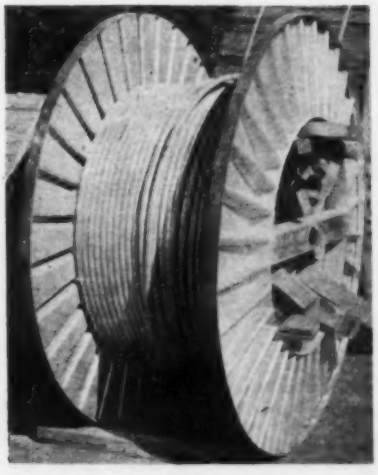


TELEPHONE POWER PLANT: The power plant is really the heart of any telephone system. The above photograph shows the power panel, ringing machines and storage batteries all located conveniently near each other. This arrangement not only makes the wiring convenient to install, but provides ease of maintenance.

UNDERGROUND CABLE SPLICING: When splicing cable in an open manhole a sudden shower may prove disastrous. The photograph below indicates how protection from rain is provided by the use of a window. The glass keeps out the rain but not the light.

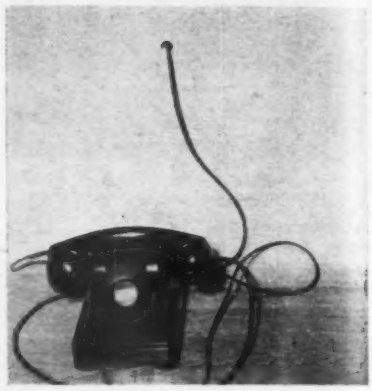


DROP WIRE INSTALLATION: When planning a telephone installation, the drop wire should be routed so that the wire run on the building is as short as possible. The above photograph shows the drop wire attached high on the building with a direct vertical run into the basement. This arrangement—a trouble-free installation is the usual result.

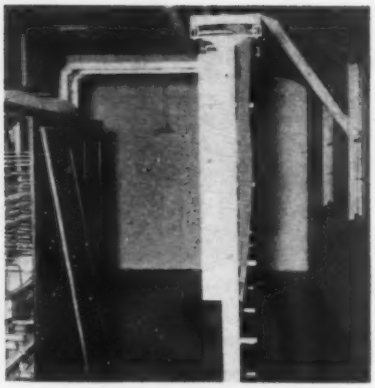


CABLE PRESERVATION: In view of the present-day shortage of critical materials, partially-filled cable reels should be properly protected. The lagging should be replaced on partially-filled reels or the reel placed inside the storeroom. When reels are left exposed as shown in the photograph above, the cable may be stolen or damaged.

CABLE REEL TRAILER: Some telephone companies continue to make use of cable jacks and a bar when a cable reel trailer would permit the work to be performed with greater ease and safety. Considerably less time is required to handle a heavy cable reel on a trailer than by using the jack method.



TELEPHONE CONDUIT: Modern dwellings constructed in recent years are equipped with conduit for telephone wiring. Not only does this arrangement permit a neat and serviceable job, but it is also convenient for the telephone company. Every effort should be made to have conduit included in the plans of modern dwellings. This conduit should have outlets at all possible telephone locations. The connecting block where the telephone cord connects to the house wire may be housed in the outlet box as indicated in the illustration.

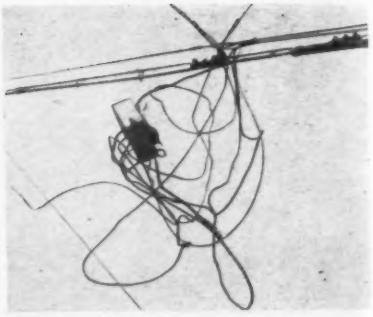


CENTRAL OFFICE EQUIPMENT: The above photograph indicates a self-supporting type of relay rack which does not require ceiling supports. The same arrangement may also be used for main frames and cable runways. This feature proves highly desirable for certain types of central office installations.

AERIAL CABLE CONSTRUCTION: When heavy aerial cables must cross wide streets or roadways, long span construction must often be used with average height poles. In such construction, double messenger strand proves a real advantage. A good example of this type of construction is shown in the photograph (left).

PROPER CLEARANCE: Present-day construction recognizes the necessity of jointly used poles. When this type of construction is used, every effort should be made to provide adequate separation of the electric power and telephone circuits. This precaution was not taken in the above photograph. Note that the secondary circuits are near the cable and in close proximity with the telephone drop wire. On construction of this type, it is always desirable to place all drop wire below the cable.

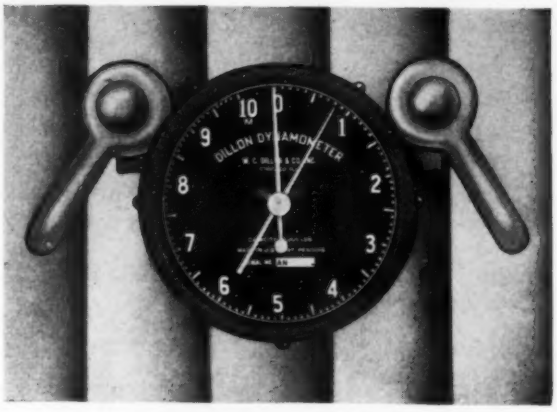
POLE TRAILERS: Long poles are expensive and difficult to handle. When proper equipment is not available, expensive poles may be broken and made worthless. Pole trailers of the type shown in the picture below, together with a drawbar hitch for attaching to the pintle of the truck, provide an ideal arrangement for pole handling.



POLE REPLACEMENT: The replacement of a pole on which a cable terminal is mounted proves a difficult task under the best circumstances. To avoid possible injury to the terminal, it should be securely lashed to the messenger during the pole transfer. This precaution was not taken in the above photograph and cable trouble resulted.

Cut Down CONSTRUCTION COST

SAVE VALUABLE WIRE AND TIME



Model "AN" Dillon Dynamometer

Correct wire tension is just about the most important thing a lineman has to consider. Wire that is too tight quickly devitalizes. Wire that is too loose causes common service failure. It's so easy to get the tension absolutely *right* with a reliable Dillon Dynamometer. No guessing anymore. Makes the job correct because it *is* correct!

YOU'LL AGREE IT'S THE MOST PRACTICAL METHOD OF TENSION GAUGING YOU'VE EVER SEEN OR USED

WRITE FOR DESCRIPTIVE FOLDER

W. C. DILLON & CO., INC.

5410 W. HARRISON STREET
CHICAGO, ILLINOIS

DILLON DYNAMOMETERS

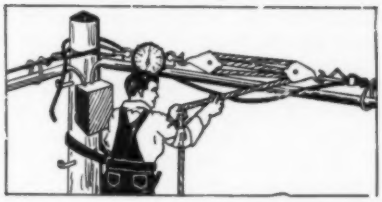
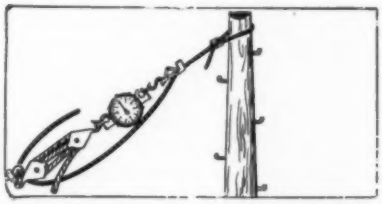
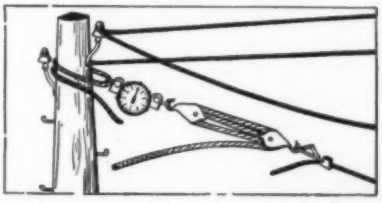


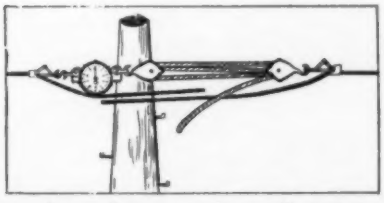
Illustration shows approved method of using Dynamometer to take up slack in messenger that has already been installed. Hookup is simple, results dead accurate.



Especially essential use for Dillon Dynamometer is to determine holding power of installed anchors. Enables crew to make sure that anchor will hold strain securely.



Dillon Dynamometer in use on rural long span wire where over-tension causes rapid wire failure. Eliminates unreliable sight and sag method. Makes job *right*!



Linemen know from experience that it is most difficult to install long spans at correct tension by sighting. Only the Dillon Dynamometer can be fully replied upon.

Make Your Tools Last Longer

(Concluded from page 29)

be avoided in new rope from the start by uncoiling in accordance with the directions on the tag attached to the end.

Dirt and grit picked up by rope works into the strand and cuts the fibres. The dragging of rope over rough ground or around corners will cause quick surface wear and fraying. Rope should never be stored wet as rot fungus will grow on it quickly. The best way to dry rope is to drape it loosely off the ground so that the air can circulate freely around it. Never dry by intense heat because when evaporation is too rapid cordage solution and natural fibre oils are extracted which makes the rope brittle.

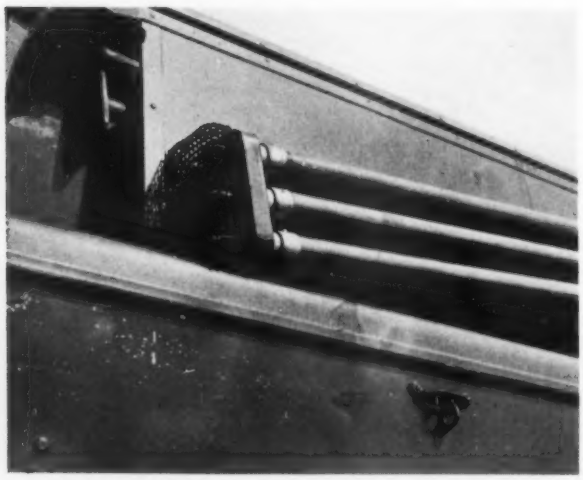
Electric Soldering Irons. Soldering irons should always attain full working temperature before attempting to solder. The tip should be removed regularly to prevent it being frozen to the core. Use file sparingly to clean tip for tinning. When the tip has worn too short for further use its life may be extended by withdrawing it about seven-eighths of an inch from the core.

This operation should not, however, be repeated. Never attempt to cool an electric soldering iron by immersing in liquid of any kind. Never permit soldering iron to remain with current on for long periods when not in use as this causes oxidation and tends to shorten the life of the tool.

Switchboard Tools. Small tools of this nature should always be carefully used as they cannot be readily replaced. Breakage of small tools such as spring benders is usually due to carelessness as no great strain is ever involved. Screwdrivers can often be saved by dressing the point properly when it first develops a fault.

Miscellaneous Tools. Tools such as chisels, saws, squares, etc., should be protected with a thin coat of oil when not in use to prevent rust. Hammer handles should be replaced when they become loose or broken. A systematic check of such tools will greatly increase their life and usefulness.

These are only a few suggestions on how your present tools may be made to last until victory comes. Even though you might have a need urgent enough to secure a priority to buy new tools, it is far better to make the old ones last if possible so the critical material used in the manufacture of some item of equipment can be utilized by our armed forces in their elimination of the Axis.



Protecting and maintaining pike poles properly.

A power grinder is useful in tool maintenance.

V V

Gas Coupons May Not Be Transferred, Says ODT

Certificates of War Necessity and "T" ration gasoline coupons may not be transferred along with titles to trucks or other commercial vehicles according to General Order ODT 21, the Office of Defense Transportation stated April 6. Those operators violating this order, the ODT pointed out, may be punished by suspension or revocation of certificates.

New operators receiving a motor vehicle through transfer must file an application for CWN immediately upon the transfer. Operators who already hold certificates must apply for revised certificates, using Form CWN-5-S if a single unit operator or Form 5-F if a fleet operator. Failure to file such applications may also result in suspension of the operator's CWN, the ODT said.

Single unit operators (operators of one or two vehicles) must return certificates to their ODT district offices and must surrender unused "T" coupons to their local war price and rationing boards upon transfer. Fleet operators must advise the nearest ODT district office of their action and return the appropriate sub-certificate.

Operators changing their area of operation or substantially changing the nature of their business must inform their local ODT district office of such changes. Changes of address should also be reported promptly. Failure to comply with these rules, ODT stated, may result in reduction of gasoline allotments or possible suspension of certificates.

V V

Army Commissions Open To Telephone Men

Among the new classifications desired by the Army for commissioning from civilian rank were telephone and telegraph engineers, according to the Cincinnati (Ohio) Officer Procurement District. Telephone engineers who are not presently connected with telephone or telegraph companies, and who are between 35 and 55, may qualify. They must be graduate engineers or have an equivalent training and experience of three or more years.

uestion

ncrease in cost to operating companies.

But today, war has added a much more important motive —that of achieving victory. The time-saving contributions of Strowger Automatic Equipment have become of truly national importance—through the trained hands and arms it has freed for wartime production jobs, by releasing telephone management from vexatious supervisory duties, and by providing the telephone user with full facilities night and day and in emergencies.

ELECTRIC

ACHINE SWITCHING AUTOMATIC DIAL SYSTEMS

D COMMUNICATION APPARATUS
NERS AND CONSULTANTS

d Possessions:
ES COMPANY, Chicago, U. S. A.
RIC SALES COMPANY, LIMITED

The Duration for Central Office Equipment

(Concluded from page 19)

week. It is important that this correct voltage be maintained as overvoltage will tend to shorten the service life, whereas prevailing undervoltage may cause a serious decrease in capacity.

Incorrect floating of the battery has often resulted when the voltmeter which is used as a guide has been inaccurate. Voltmeters should be checked for their accuracy at the operating voltage point. It does not make any difference if the meter is off zero when in a zero position, as long as it is correct at the operating voltage point.

Another point that is well to check is the floating voltage of end cells. Frequently the end cell is trickle-charged from a small rectifier. The trickle charge rate for these cells should be adjusted by voltage so that 2.15 to 2.6 volts per cell is obtained at the cell terminals.

Continuous Variable Current. The continuous variable current method of operation is one in which the charging equipment output is adjusted sufficiently low so that the battery is only restored to a fully charged condition at the end of the lightest load period of the week. In general it can be expected that the battery will be on a slight discharge throughout most of the day load period and that the charging equipment output will not equal the day load.

However, during the night when the load is less, the battery receives some charge. If the installation has a characteristic of a light load period of the week, such as often occurs over a Saturday afternoon and Sunday period for certain types of installations, the charging equipment output should be sufficiently low during the week so that the battery has discharged sufficiently at the end of the heavier load period. Then the resultant charge during the light load period will not overcharge the battery but only restore it to a fully charged condition.

Cycle Method. In cycle operation it is important that the battery is not fully charged daily. It has been the general practice to charge the battery so that it is between 80 and 95 per cent charged for the daily charge and once a month to give the battery an equalizing charge to restore it to a fully charged condition. This procedure makes certain that the battery will not be overcharged on each charge. The daily charge should be terminated before the battery is up to the last equalizing charge reading. Batteries in cycle service are usually engineered with a capacity sufficient for ample reserve when the battery is only 80 per cent charged.

Battery Care

Keep the top of the battery clean and dry.

Maintain the electrolyte level between the top of the separators and the high level point by the addition of approved water. Do not fill the cells above the high level.

Use only clean hard rubber, porcelain or glass vessels for water. Do not use metal containers. Impurities even in minute quantities are detrimental to the life and capacity of a storage battery.

The gas accumulation in a cell between the top of the electrolyte and the under side of the cover is an explosive mixture. Keep flames and sparks away from the battery. Voltmeter prods which have a long section of exposed metal should be taped to guard against causing a short circuit above the cell when taking individual cell readings.

Do not lay tools on top of a battery which may cause a spark or short circuit of a cell.

If acid is spilled in any way, neutralize with ammonia water or washing soda.

Never add acid to a battery unless acid has been lost.

It is general practice to locate batteries where the temperatures are not excessive. When a choice is available between a hot or cool location it is recommended that the cool location be selected.

Records

The individual cell voltage and corrected specific gravity readings should be recorded at intervals. In cycle service it is suggested that these be recorded after the equalizing charge. In other types of operation recording these readings about once every three months prove satisfactory.

Sub-station Equipment

Sub-station equipment should be carefully maintained by periodic routine inspections. Check transmitters and receivers for efficient transmission. Check all station protectors and ground connections. Explain to subscribers that repair parts are difficult to obtain and ask their cooperation by handling cords carefully to make them last longer. Operators should also be cautioned to handle their headsets with care so that their maximum life will be obtained.

Take necessary action to provide adequate fire protection for the exchange. Make sure that the necessary fire extinguishers of an approved type and other fire fighting equipment are provided. It is also a good plan to issue instructions, then give demonstrations to all employes as to the proper use of this equipment.

Confer with insurance inspectors for advice on reducing possible fire hazards. Ask local fire department officials to look over the exchange so that they may become familiar with conditions and know the best method of handling a fire should one occur.

Necessary emergency lighting equipment should be provided for use during a black-out or failure of the commercial power supply. This may be handled by mounting small battery-operated lights on the switchboards controlled with a switch or by the use of flashlights and electric lanterns. There is now available an electric lantern which is equipped with a relay which may be connected so that it is automatically turned on in case of a power failure. Such an arrangement proves desirable in that it tends to reduce confusion in the event of an emergency.

Getting maximum value out of present telephone equipment is a big step toward our ultimate victory over the axis. Then, too, if we conserve in every way possible what we now have the job of converting to a peace-time basis after victory is won will be much less costly and difficult.

V V

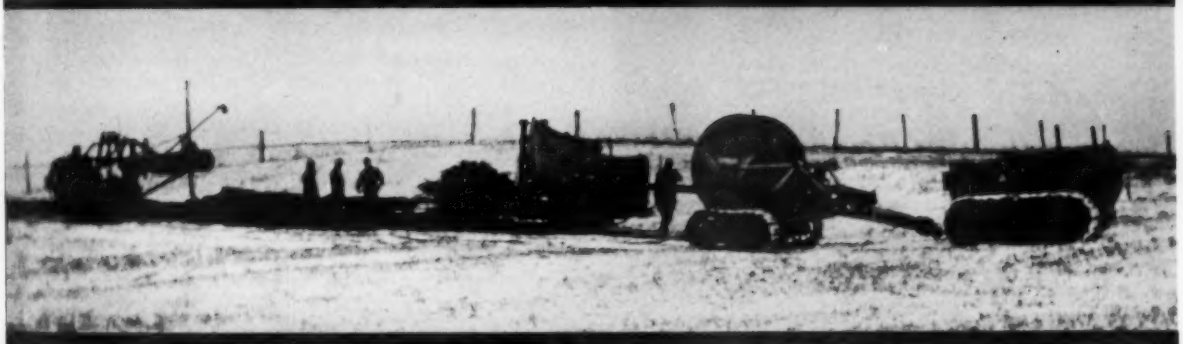
Bell Telephone Laboratories Reveal "Paracon," New Rubber

The development of a new kind of synthetic rubber which will help meet essential war needs has been announced by the Bell Telephone Laboratories in New York City. This new material christened "Paracon," looks and feels like ordinary rubber, has a high resistance to damage by oil or gasoline, and is superior to natural rubber in resistance to steam, alkalis and acids.

In the raw state, Paracon is unusually adapted to moulding into intricate shapes. It can be derived from agricultural products and coal products, or from coal and petroleum sources.

"CLEVELANDS" . . . .

"TOPS" for BURIED CABLE and CONDUIT TRENCHING



"CLEVELANDS" Afford:—

- The fastest method of burying cable with the least outlay for equipment.
  Speeds in excess of 1000 feet per hour in open country.
- Minimum expense for property damage and right-of-way damage claims.
  Drain tile breakage immediately located and repaired.

• • •

Special models for digging trench in the congested areas of cities and suburbs are available.

THE CLEVELAND TRENCHER COMPANY

20100 ST. CLAIR AVE. *"Pioneer of the Small Trencher"* CLEVELAND, OHIO

"CLEVELANDS" Save More . . . Because they Do More

Approved Maintenance Practices

By DANIEL SEITZ
Cable Superintendent
York (Pa.) Telephone & Telegraph Co.

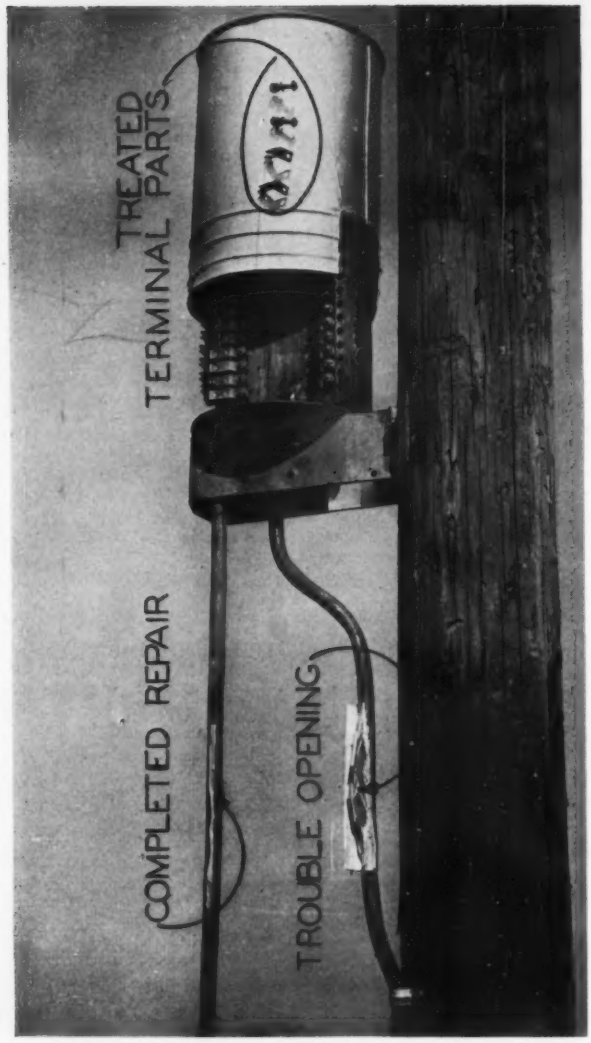


Fig. 1. Terminal and stub treatment of moisture stub.

PART XXX. This installment in Mr. Seitz' series of articles for plant men discusses preventative maintenance of plant, beginning with the aerial cable terminal and going back along the aerial and underground cable to the central office. (Previous installment appeared in the March 13 issue of TELEPHONY, page 26.)

BEGINNING with the aerial cable terminal cover and going all the way back along the aerial and underground cable to the central office, numerous places can be found where preventative maintenance may be applied to save critical war material and at the same time prevent subsequent cable failures. Cable terminal covers made of metal that will rust should be painted, preferably with a good metallic paint (see page 64), but if this is not available any other good paint will prolong their life and prevent replacement for the duration at least.

It would be most difficult to find a substitute for the present terminal covers and a cover that leaks may make it necessary to replace the entire terminal due to moisture reaching the vital parts. In some localities and in certain seasons when the air is heavily laden with moisture, faults develop because of the moisture entering through the openings in the bottom of the terminal. The line end of those fuse terminals nearest the bottom is generally the first to be affected.

The battery on common battery or automatic systems aggravates this condition causing high resistance, shorts, crosses and sometimes grounds. Removal of the terminal parts from the affected lines and drying the wood panels then applying several coats of shellac before replacing the terminals will in many cases be only a temporary repair.

Fig. 1 shows the screw and fuse clip assembly of the line end of one pair which have had that portion of the screws and clips that come in contact with the wood coated by dipping them in asphalt heated to approximately 300 degrees F. After they are dipped the asphalt must be removed from the clip and screw where they come in contact with each other to insure a good connection, but be sure not to remove any asphalt that will allow the screw or clips to touch the wood. If this work is done carefully it will avoid the recurrence of trouble and the replacement of the terminal.

Sealing the space around the insulated wires where they enter the bottom of the terminal with a pliable compound such as duct seal will also aid in preventing the moisture from causing trouble. *Fig. 1* also shows how many of the

For Continuing Achievement

A STAR FOR WESTON

—evidence that the vital instrument situation rests in good hands!

A star now adorns the ARMY-NAVY "E" pennant awarded to WESTON just 6 months ago . . . the first such pennant awarded in this highly specialized instrument field.

It's a star that has *real meaning*. Because, from the very beginning of our defense period, the responsibility for producing the vast quantities of instruments vital to the success of our country's efforts, has rested largely on the instrument leader.

This star signifies that the responsibility *rests in good hands*. "The men and women of the WESTON Electrical Instrument Corporation," writes the Chairman of the Navy Board for Production Awards, "have achieved a signal honor by continuing their splendid production in such volume as to justify this award . . . indicating their solid determination and ability to support our fighting forces with equipment necessary for victory."

But a great instrument task still remains . . . before victory is ours. So WESTON workers continue reaching for new goals . . . with the same determination, the same painstaking devotion to the quality ideal, responsible for WESTON'S *continuing leadership* in the instrument field.

WESTON ELECTRICAL INSTRUMENT CORPORATION, NEWARK, NEW JERSEY

solid faults that occur in the stub cable may be satisfactorily and economically cleared without using a sleeve or replacing the stub. Care should be taken to locate accurately the fault with the tone and exploring coil, then an opening as shown in the photograph should be made; then, after the faulty pair or pairs are insulated, the sheath may be replaced in its original condition as is shown by completed repair.

When the length of the stub cable will permit, the solder job is made easier by bending the cable so that the opening will be in a horizontal position. This should be done before the opening in the sheath is made. The soldering of the sheath may be done by any of several methods, such as electric arc or by using a torch or soldering iron. The solder required for such repair is very small in comparison to that when a sleeve is placed over the opening and if done properly will make even a better job.

This method is just as applicable when clearing pairs in the main cable especially on the smaller cables and where the faults are likely to be in or near the outside layer of pairs. This method is always worth a try where clearing solid faults caused by lightning, etc. In many instances a sleeve and precious wiping metal will be saved.

Permanent repairs to the sheath in the case of some failures caused by moisture may be made in the same manner especially where the insulation has not been greatly injured and only a few pairs must be spliced out. Using the small grain desiccant and working it in between the pairs and wires after the paper tape is removed is a safe way to clear most causes of moisture.

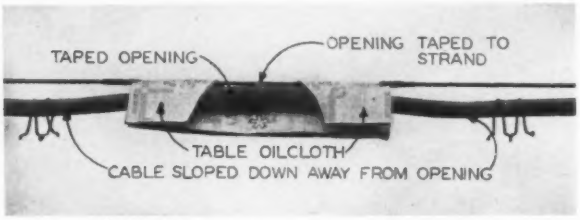


Fig. 2. Protecting temporary cable opening.

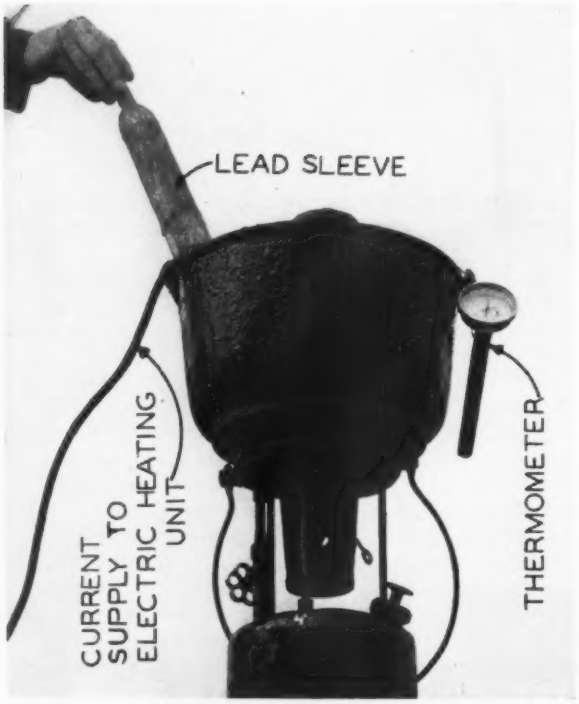


Fig. 3. Removing wiping metal.

After the cable is cleared a wrapping of muslin or paper tape should be placed around the pairs before replacing the sheath. Permanent repairs should be made immediately upon the clearing of underground cable faults. Wherever possible this should be done on aerial cable also. However, because of present labor shortages and other conditions it may be necessary to delay the placing of the lead sleeve for a long period of time.

Fig. 2 shows a method of protecting a cable opening that will be safe for use a year or longer. The opening is wrapped in the usual manner with paraffin or waxed muslin. This opening is then taped after which it is painted with asphalt heated to approximately 300 degrees F. The center of the opening is taped to the strand and the cable bent down on either side of this point. Two ply of table oilcloth placed as indicated completes the job.

Displaced or missing cable rings should be replaced immediately as when only one ring is out of place or is missing there often is cable failure. Aerial cables that show the beginning of ring cuts may often be saved by moving the rings and installing additional ones, making sure that they are the same size as those already in place.

Fortunately the underground plant does not depreciate as rapidly as the aerial portion. The underground cable sheath should be watched carefully with regard to electrolysis and regular routine tests carefully made and the necessary remedies applied. Neglecting to do this may seriously interrupt important service to war industries and require cable and material for replacements that may be urgently needed elsewhere.

Cables must be well supported in manholes if the necessary racks are not available. Temporarily use bricks or other similar materials that are available, or even well-painted wood will last a long time. Short lengths of discarded messenger strand or iron wire will be found very satisfactory as reinforcing material in concrete when making repairs to manholes or other underground plant. Coating the exposed portions of I-beams in the corbal roofs of manholes and elsewhere with a sand and cement plaster will greatly lengthen their life. Ordinary paints will not protect the steel because of the moisture present in nearly all manholes. A small piece of lead sheath used as a pad between the cables and at the points where they come in contact with the edge of the ducts or other sharp objects will prevent sheath damage due to vibration, etc.

Solder work such as wiped joints and seams should be pressure tested either by the use of nitrogen gas or with compressed air. Flash testing with compressed air is satisfactory, but under no circumstances should the air be used without first drying it. Only properly dried air should be used because it has been definitely proved that enough moisture can be introduced into the cable by the injection of undried compressed air to cause cross-talk and cross-ringing especially where harmonic ringing systems are in use. Suitable air drying equipment is now available.

Cables supplying service to vital war industries and military establishments where a cable failure would be extremely serious should be protected by being kept under constant gas pressure with an alarm system to warn when the gas pressure is released. The alarm system will give an instant warning in case of sabotage or any normal sheath damage. It is relatively easy to keep inter-office cables under constant pressure by installing gas dams at each end. When cables are of considerable length it is well to sectionalize them, thus providing a means of localizing any cable failure that might occur due to sheath damage.

(Continued on page 52)

Crapo HIGH-TENSILE LOW-RESISTANCE LINE WIRE

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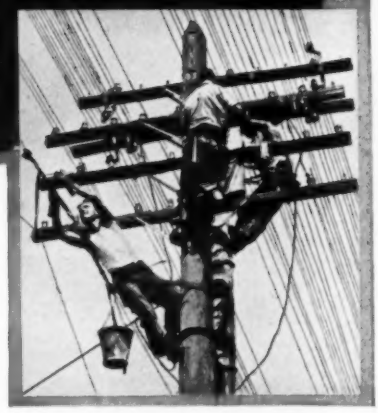
"An Ounce of Prevention Is Worth a Pound of Cure!"



THERE never was a time in the history of the telephone industry when "preventive maintenance" was so essential as it is today. Communication lines must be kept at peak efficiency as a vital aid to the war effort. This demands constant vigilance, skillful planning and the judicious use of critical materials.

Where open wire circuits are involved, it is wise to (1) make a thorough inspection of the line; (2) remove excess sag in the line wire; (3) replace loose and missing ties; (4) tighten or replace guys, where necessary, to strengthen the pole structure.

Where needs demand, replace sections of line with *Crapo* HTL-85 High-tensile, Low-resistance Line Wire. It has 60% greater tensile strength than standard BB; provides an increased factor of safety, minimizes maintenance.

For essential new construction, specify *Crapo* HTL-85 or *Crapo* HTL-135 Line Wire! *Crapo* HTL-85 permits spans to 225 feet in heavy loading districts. *Crapo* HTL-135, with two and one-half times the strength of BB wire, makes possible spans of 350 feet under heavy loading conditions. Both have transmission qualities superior to standard BB wire.

Contact the distributor of *Crapo* Galvanized Products near you or write direct for Bulletins No. 201 and No. 202!

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ASSAULT WIRE MEETS EVERY BASIC MILITARY REQUIREMENT

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S RUBBER COMPANY

(Continued from page 48)

If terminals are connected to the gas-filled cable at intermediate points it will be necessary to provide some method of preventing the escaping of gas by way of the terminal itself. Terminals and entrance cables connecting vital plants, etc., should be protected against sabotage, especially the aerial cable. No pole steps should be placed on any poles along such important cables as so doing might make it more convenient for a saboteur. Conservation of critical war material should be religiously practiced and then be followed by the best protection possible for plant.

Installation and maintenance of lead sheath cables demand the use of solder in some forms. The *victory* splice is an example of solder saving, while at the same time making a good job. When doing even the smallest solder job on cable sheath, a catch pan should be used to avoid the loss of any solder.

Fig. 3 shows method for removing the wiping metal from splices of junked cable by the use of hot oil. Two methods of heating the oil are shown, one by using a fire pot and the other by immersing a thermostatically controlled electric heating unit in the oil. In this manner an even temperature can be maintained without regulation as is necessary when using a fire pot.

Any heavy motor oil with a flash point of not less than 600 degrees F. will do the job. *Cylesso* No. 300 having a minimum flash point of 630 degrees F. is recommended. A thermometer for checking the temperature of the oil is necessary when the oil is heated over a fire pot. The temperature required to remove the wiping metal will be 475 degrees to 500 degrees F. Too high temperatures will melt the lead sleeve or sheathing and this must be avoided.

After the wiped joint has been left in the hot oil a short time the wiping metal will be removed after which a wire brush should be used to remove any small amounts of remaining solder. Never scrape the hot wiping metal from the joint with sharp tools as it may add undesirable lead to the wiping metal. The oil may then be drained off and the liquid solder poured into moulds for reuse. Removing the wiping metal with a blow torch is not nearly as fast or satisfactory as the hot oil method, especially where a number of splices are involved. Extreme care must be taken to avoid melting the sleeve or sheath when using a torch, however, controlling the temperature is much more difficult.

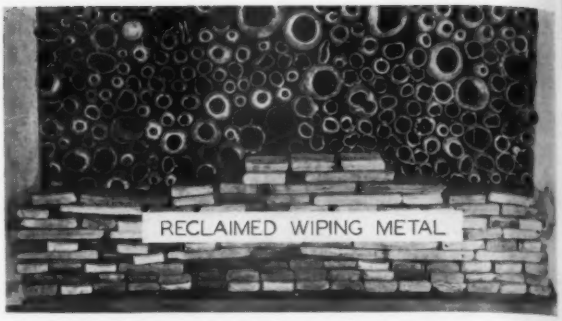

Fig. 4. Part of this wiping metal was removed from the sleeves above.

Fig. 4 shows a sizeable amount of recovered wiping metal in pig form ready for reuse. By adding a portion of the reclaimed wiping metal to new metal the proper proportions of tin and lead may be maintained. Do not overlook any wiping metal in the junk, not even seams on large sleeves. Recovering it provides a good job on rainy days for the cable men who would otherwise be idle.

SAVE AND HAVE FOR VICTORY.

(Another installment soon)

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FLASHLIGHTS · BATTERIES
MADISON, WISCONSIN

Save the Surface!

(Concluded from page 22)

First Coat: One gallon paint, one gallon linseed oil and one quart turpentine (except for use in equipment rooms).

Second Coat: One gallon paint and one pint turpentine (except for use in equipment rooms).

Third Coat: Each gallon of paint may be thinned with a pint to a quart of linseed oil.

There is also what is known as the two-coat system which many manufacturers recommend for exterior use. This system consists of an exterior base coat or primer which must not be thinned but must be used as it comes from the can. The second coat is regular exterior paint applied over the base coat and gives a complete and excellent job.

Over previously painted exterior surfaces that need paint —and one coat will not do the job—this is an ideal way of getting good solid hiding with the maximum of wear and weathering qualities included. The material should be used as follows:

First coat: Exterior base coat, thoroughly mixed but not thinned.

Second coat: Exterior finish coat, thoroughly mixed but not thinned, except in damp weather when a pint of boiled oil may be added.

Nail holes and mitered joints should be filled with putty after the priming coat is applied. When all old paint is to be removed use a blow torch.

When estimating paint requirements it must be borne in mind that the surface which may be covered per gallon will depend on the kind of surface to be painted and the skill of the painter. It may, however, be assumed that on the average one gallon of paint will cover 400 square feet of porous or sand-finished walls or 500 square feet of new smooth finished walls. One gallon of floor varnish will cover about 550 square feet of average floor surface.

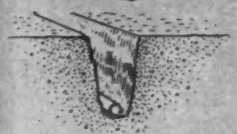
Construction and maintenance trucks used by telephone companies should be repainted at regular intervals. Not only is this action necessary for preservation of the equipment but a well painted and neat truck is also the best advertisement any company can have. Equipment such as trailers, splicers, carts, pole jacks and derricks should also be painted at regular intervals. Truck bodies should have the old paint thoroughly removed before repainting. A flat coat primer with two or more thin coats of enamel is ideal for truck painting.

The air gun or paint spray may be used to advantage on various painting jobs, in the telephone exchange. This equipment proves ideal for the painting of trucks and tool equipment. When brushes are used they should never be soaked in water but should be cleaned with turpentine and then suspended in linseed oil. Good brushes are expensive and should always be cleaned carefully after being used in order to insure maximum life.

There is no doubt but that the proper use of paint is a material help for any telephone company in building public relations. When the public notices that buildings and equipment are well painted and neat they naturally form a good opinion of the company who own them. *However, the greatest saving is that equipment kept painted will naturally last longer. In times of national emergency such as the present, when we must get the most out of what we have, every possible effort should be made to conserve in every way. It is sincerely believed that the proper use of paint will assist telephone people in doing their share to win the war.*

DO YOU KNOW THESE FACTS ABOUT TRANSITE DUCTS?

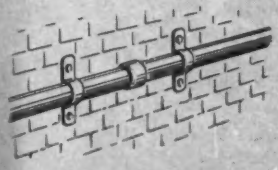
TRANSITE CONDUIT



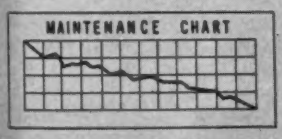
This durable duct is for use underground, or on exposed locations without a protective casing . . .

TRANSITE CONDUIT

Under sustained earth loads and traffic pressure, it maintains its strength and true form . . .



Transite Conduit effectively resists weather, smoke and fumes...is virtually unaffected by corrosive soils...



Its cost is low and, in service, it is much more economical than other materials of comparable strength and durability.

. . . In addition, both Transite Conduit and Transite Korduct have these characteristics . . .

1. Incombustible—Made of asbestos and cement, they cannot burn . . . will not contribute to the formation of dangerous smoke, fumes or gases.

2. Immune to electrolysis . . .Transite Ducts are non-metallic and inorganic . . . unaffected by electrolysis.

3. Smooth bore—Making cable pulls easier, both at initial installation and after years of service.

4. Easily installed—Lining up is fast and accurate because Transite Ducts combine light weight, long lengths, simple assembly.

For details and specifications, write for Data Book DS-410. Johns-Manville, 22 E. 40th St., New York.

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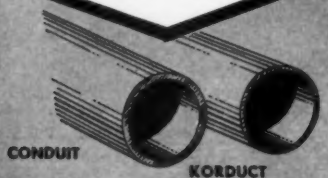
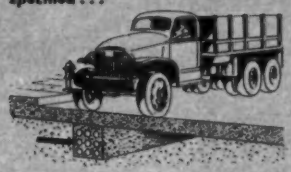
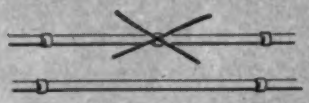


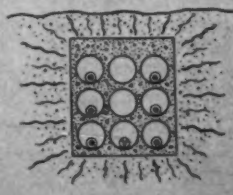
Thinner walled, lower priced than Transite Conduit, Transite Korduct is for use where an encasement is specified . . .



Because Korduct is incombustible, less concrete is required between ducts to provide the necessary degree of fire protection.



Its long lengths (10 feet) mean fewer joints, reducing the number of spacers required . . .



Its high rate of heat dissipation lowers cable operating temperatures . . . increases system capacity . . .

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TRANSITE DUCTS

TRANSITE KORDUCT— for installation in concrete

TRANSITE CONDUIT— for exposed work and installation underground without a concrete encasement

SESSIONS FULLY ATTENDED

At Nebraska Convention

By H. T. DOBBINS

TRAVEL restrictions and the elimination of an operators' conference, a usual feature of the annual convention of the Nebraska Telephone Association, materially reduced attendance at the annual convention held in Lincoln, April 13 and 14. Registrations, however, amounted to a satisfactory total, 120. Officers of the association were especially gratified over the fact that every session was more fully attended than at past conventions. Most of those present were key men in the various companies, and more of the latter were represented than in previous years, but company representation was smaller.

Otto Fuerst, general manager of the Platte Valley Telephone company of Scottsbluff, was re-elected president. Re-elected also were F. C. Thrasher, Red Cloud, as vice president, and George M. Kloidy, Lincoln, secretary-treasurer. A. B. Clark of Columbus and D. M. Davis of Aurora were re-elected directors for a three-year term, and Neil Schreck of Bertrand succeeded C. L. Kelly of North Bend on the board.

The directors voted to hold the 1944 convention at Omaha, but whether one will be called depends upon conditions then existing.

In opening the convention, President Otto Fuerst said that in the entire history of the industry no such conditions as now exist have ever been faced, and no year has been so difficult as the one last past. The war has brought new responsibilities that have had direct contact with the development of war projects, and not only are contributions being willingly made by telephone men but in this they have had splendid cooperation from the public. The winning of the war transcends in importance any job they have ever done before, and since to lose it would mean to lose everything, they must and will do the job. We are pledged to do this.

"But what about the day after victory?" he inquired. "Will we be able to resume and continue to expand and improve the telephone business as we have done in the past? I am inclined to believe that unless we use our heads we can very easily or rather unintentionally or absent-mindedly slip into some sort of totalitarianism. We will again need the spirit of the pioneers. This spirit must be an organized spirit.

"The men of the telephone industry must take a leading part with all other

Photographed at the Nebraska convention (left to right): EDDIE VAIL, attorney, OTTO KNICKREHM, member, and DUANE T. SWANSON, chairman, Nebraska State Railway Commission; JOHN R. PORTER, Tarboro, N. C., president, U. S. Independent Telephone Association, and RICHARD H. LARSON, also of the state commission.

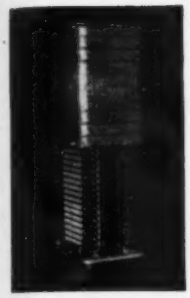
"During These Times" was the subject discussed by JOHN R. PORTER, Tarboro, N. C., president, U. S. Independent Telephone Association.

DUANE T. SWANSON, chairman of the Nebraska State Railway Commission, spoke on "Rate Problems During the War Emergency."

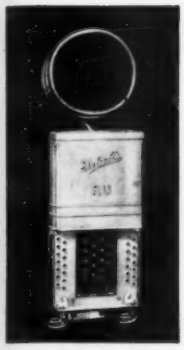
A welcome guest speaker at the Nebraska convention was LEIGHTON H. PEEBLES, Washington, director, Communications Service Branch, War Production Board.

H. F. McCULLA, Lincoln, member of USITA Toll Compensation Committee, shown giving a report on "Toll Compensation" at the Nebraska convention.

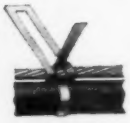
"Communications Within the Army" was discussed by T. L. FRANK, Omaha, building equipment engineer of the Northwestern Bell Telephone Co.

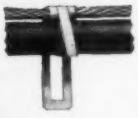


B-27 Protected Cable Terminal



RU Unprotected Cable Terminal





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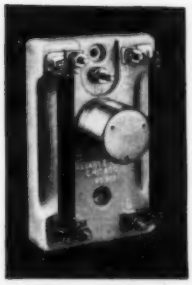
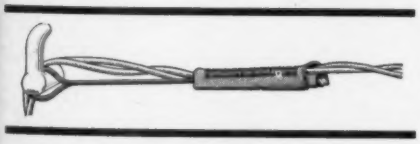


No. 955 Station Protector

No. 1000 Outdoor Protector



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business and we must see to it that we retain our freedom, our private business and our way of life as we knew it before the war. Telephone men organized into a strong state association will best be able to do the planning and the organizing that is worthy of our freedom. So let us place our trust in God and pull together for a brighter future and a better life."

J. R. Porter, president of the United States Independent Telephone Association, told his hearers that "the time is here for the manager of a telephone company, if he doesn't know Susie and Johnny, to get acquainted with them." He asserted that if the war continues for two years more, two million persons will want telephones but materials and labor will be lacking unless management everywhere begins right now to plan for taking care of the tremendous backlog of orders now piling up.

Mr. Porter said that telephone companies cannot count on more than 25 per cent of their employes now in or entering military service returning to their positions. Mr. Porter said that it would be sound business judgment to keep in touch with the manufacturers all through the lean times in order to meet post-war problems of service.

Mr. Porter explained in detail the setup of the national organization to show how thoroughly equipped it is to handle all the problems of members

OTTO FUERST, Scottsbluff, re-elected president of the Nebraska Telephone Association, is shown as he delivered his annual report at recent convention.

and how its activities have been coordinated with federal agencies in the war effort.

Draft Situation of Telephone Men

A great deal of interest was shown in the address of Gen. Guy N. Henninger, head of the Selective Service System in Nebraska, who had just returned from a conference in Washington over the changed orders. The general told the telephone men that how heavily the shadow of induction falls upon men in the industry depends principally upon two things: the work an employe is doing, taking into considera-

In this group are (left to right): G. B. FOSCUE, Chicago, chairman of the USITA's coordinating committee; C. N. MORSE, Omaha, Wage and Hour Division; JOHN R. PORTER, Tarboro, N. C.; GEO. M. KLOIDY, Lincoln, secretary of the Nebraska association, and WALTER W. KING, Kansas City, Mo.

General view of a session during the Nebraska convention.

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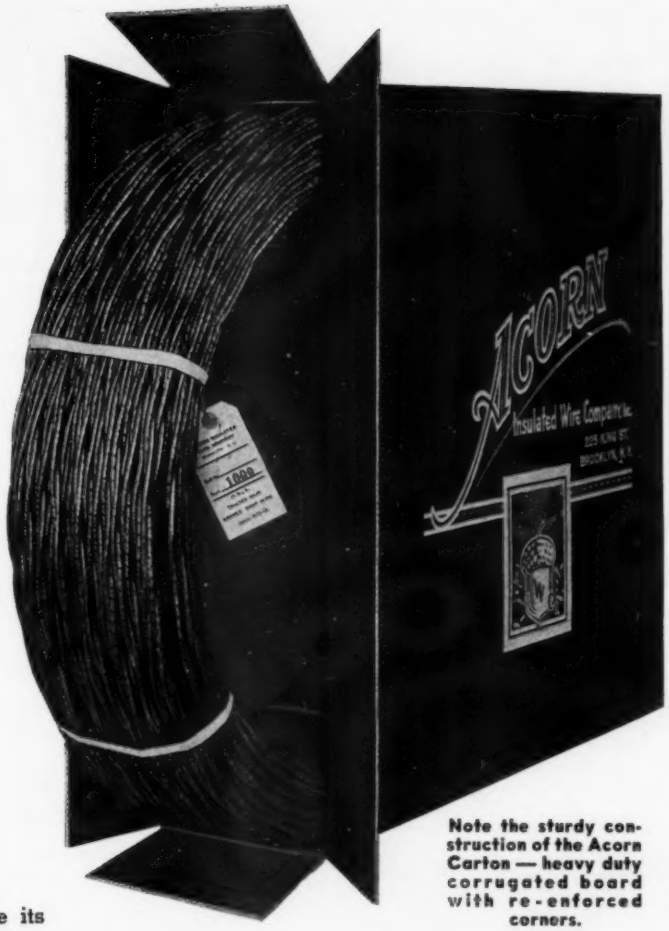
Many accidents—some of them fatal—are caused by toppling piles of paper-wrapped coils. This cannot happen with Acorn Drop Wire in Acorn "Safety" cartons.



Note the sturdy construction of the Acorn Carton — heavy duty corrugated board with re-enforced corners.

NO TELEPHONE company should expose its men to needless risks at any time. Least of all today, when lost man-hours due to accidents directly hinder the war effort.

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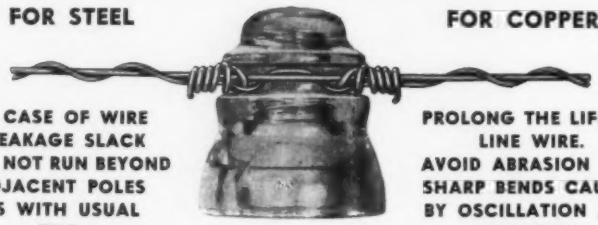

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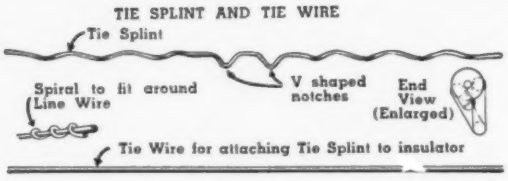
TIE SPLINT AND TIE WIRE
Tie Splint
Spiral to fit around Line Wire
V shaped notches
End View (Enlarged)
Tie Wire for attaching Tie Splint to insulator

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SEE PAGES 64-65 FOR ANNOUNCEMENT OF NEW LINE OF MAINTENANCE PRODUCTS

tion the availability of a replacement for him, and the dependency obligation he acquired prior to December 7, 1941 and has continually fulfilled.

The telephone industry, the general said, is recognized by the War Manpower Commission and Selective Service as deserving of special consideration. Local boards have instructions to proceed carefully as they call men from this industry so as not to cripple a vital service. This does not constitute a license to those boards to exempt men. Like all others, the telephone industry is expected to release men for the armed forces.

It is the present intention to induct every man eligible for military service between 18 and 38 who meets requirements and who is not a key man in an essential activity or whose induction would bring about extreme hardship. A key man, he said, is one doing an essential job in an essential activity who cannot be replaced by the close of 1943 because of his training, skill and experience.

The gears have been set in Washington for the induction of the great majority of government employes, and this policy can well be taken as a cue by private industry that it cannot expect any relaxation of the calls upon it for military purposes or of programs which involve training of ineligibles to take the place of eligibles when they are called later.

The new registrants will be men who until now have had two reasons for deferment: working in an essential activity but not necessarily in key jobs, and having dependency obligations recognized by the SSS. Men in the communications service who have been in 3-B, which has been eliminated, and who married before December 5, 1941 and have children, will be moved into 3-A, but those married men without children will be moved into Class 1-A unless the employer is able to substantiate a claim for him as a key employe, and then the deferment is good for only six months at a time.

The general said that the elimination of Class 3-B is a warning to industry that it cannot expect to obtain prolonged deferment for single or recently married men on the ground that such men are "key" employes.

"There is no dispute," the general said, "on the question of the communication industry being vital to the war effort. It is vitally important and you, as part of that utility, have been doing a magnificent job. But the communication industry is no more important to that effort than are numerous other undertakings, such as ship building, airplane construction, food production and transportation.

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. . . Has No Moving Parts Nothing To Adjust

Sub-Cycle is designed around and based upon sound fundamental engineering principles. It is a static frequency converter producing ringing current from commercial power without any moving parts. In it there is nothing to get out of order or require any routine maintenance. It is built for heavy duty — is amply powered, economical and quiet in operation and does not interfere with radio reception. The output voltage regulation between no load and full load is very close.

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ELIMINATE *Dampness, Excess Moisture in Cables, Coils, Relays with* WATER-SORBER

Protects switchboards and control rooms from excess moisture. Keeps cables, protector coils and cut-off relays trouble-free. Prevents voltage leakage.

Water-Sorber units are compact, handy dehumidifiers. Require no care except occasional refill of chemical. Used by telephone exchanges throughout the country.

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Protek-Sorb Desiccant has more than twice the moisture absorbing capacity of other desiccants . . . splices return to normal insulation hours before you'd expect it. You can install and repair cable faster, be assured of permanent, trouble-free splices.

In addition, you'll be free of the dangers that go with "boiling-out" . . . the inconveniences and hazards of "oven-drying" of splices. Protek-Sorb Desiccant is absolutely safe to use . . . chemically inert and non-reactive . . . does not give off noxious fumes or objectionable odor.

Simply follow the easy procedure outlined on the instruction sheet that is waiting for you at your regular telephone jobber. Shows correct amounts of Protek-Sorb Desiccant to use for maximum efficiency.

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Your BARCO Gasoline Hammer is a most valuable Tool for the work at home that must go on.

You save rubber and gasoline in transportation and still more gasoline in operation. Overall cost is reduced to a minimum. These have always been characteristics of the BARCO Hammer, but now are of more importance than ever.

New equipment is scarce and must be conserved and existing equipment should be kept going with careful attention given to maintenance.

Repair parts are available from factory or dealer stock on reasonable priority.

Consult your BARCO dealer regarding the maintenance of your Hammers and the possibility of rebuilding and putting back into service old and discarded machines. He will also assist you in locating used Hammers and will recondition them if necessary.

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"It will take work and patience to surmount some of the difficulties entailed, but I assure you that care is being taken to make sure the manpower withdrawals from essential enterprise will not become so burdensome that they will throw vital industrial and production operations into chaos."

General Henninger said that the telephone companies are eligible to participate in the WMC's manning table and replacement schedule, and urged the larger companies to adopt it.

Rates Cases and OPA

Chairman Duane T. Swanson of the Nebraska State Railway Commission said that only two rate cases have been before that body since the adoption by Congress of the amendment to the price control act requiring that notice of proposals to increase rates be given before they were granted. In one, telephone rates at 16 exchanges of a company were involved and the other was a taxicab fare case. In the former the matter had been fully submitted at the time the amendment was passed.

After several conferences the company decided that OPA should be notified. It later filed briefs in which it took the position that it was the primary responsibility of regulatory commissions to prevent inflationary rates and charges and to forestall unnecessary increases in the cost of living that would result. It protested, however, that under no circumstances should extraordinary wartime federal taxes be charged to operating expenses above the normal rate.

Mr. Swanson said that it was difficult to understand how a slight increase in rates for exchanges far from metropolitan centers affect the national economic policy. The commission has also been puzzled as to what the words "general increases" in the amendment mean. Nowhere in the act nor in Interstate Commerce Commission decisions has there been any definition of them.

The Nebraska commission has, therefore, worked out the plan of advising a telephone company inquiring about a rate increase as to the contents of its application. When the application is in proper form the company is notified of the date of hearing. This is usually 40 days thereafter, which gives the company time to notify OPA. Local communities affected are notified. A field investigation or case study is made by the commission staff in the interim. If no formal hearing is necessary, official action is taken on the date designated. This procedure is followed for the smaller exchanges.

Aside from the cases mentioned OPA has not actively participated in matters before the commission, Mr. Swanson

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ESPECIALLY PREPARED FOR RESURFACING
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Whether in wartime or peacetime progressive telephone companies have as a *maintenance* "*must*" the regular and periodic *resurfacing* of all the interior and exterior of their buildings and of all equipment subject to rusting.

However, government restrictions on the use of materials and equipment makes it imperative that *all* telephone companies, *large and small*, take immediate and positve steps to safeguard their present property. The first step in the prevention of deterioration of buildings and equipment is to give them a good *resurface* which will resist the effects of the elements and wear and tear.

TELEX paints, varnishes, lacquers and enamels provide this essential *resurface*. They are prepared by one of the foremost paint manufacturers and there is a TELEX product for every telephone *maintenance resurfacing job*. And—the cost of protecting property the TELEX way is within the reach of every telephone company. Careful surveys and exhaustive tests with many Telephone Company properties have enabled us to produce a TELEX product especially prepared for each specific purpose. Consult the next page for a few of the various types of TELEX paints. You'll be surprised at how little it will cost you to completely resurface your exchange property buildings and equipment this spring or summer.

There is a TELEX Paint, Varnish, Lacquer or Enamel for every Telephone Company maintenance purpose. If our Color Experts can assist you in arranging the proper color schemes for your offices, etc., please feel free to call upon us. There is no charge for this service.

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Lightflex Fumeproof Extra Semi-Gloss Enamel is truly a remarkable product and has become very popular with large industrial companies having acid fume conditions with which to contend. It is unusual because it lends itself to brushing as well as spraying. It dries very rapidly with an extra high semi-gloss that retains its high light reflection long after ordinary fume proof enamels lose their light reflecting properties under similar conditions. This product also comes in high-gloss, and is obtainable in white and ten standard colors. Will cover from 275 to 475 square feet per gallon.

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The finest Flat Wall Finish possible to procure. Heavily bodied, this paint flows freely and is self-leveling. Remarkable hiding power alone places it far above ordinary wall finishes. Proper blending and the select grade of ingredients, account for the extra long wearing quality and unusual hiding power and covering capacity. Will cover approximately 450 square feet per gallon. Does not include any turpentine. Obtainable in all standard colors.

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An exceptional product for efficient protection of metal surfaces even when subject to the most severe exposure and temperature changes. It is waterproof, acid and alkali proof, and fume resisting. Containing graphite and red lead pigments, it is itself rust inhibitive and requires no primer, although it is very often used in conjunction with Liquid Red Lead. It is long in oil, therefore extremely plastic, yet is tough enough to withstand an unusual amount of scuffing and scratching. It covers approximately 600 square feet per gallon—one coat. It is obtainable in Grey, Red, Green, Brown and Black.

Telex EXTERIOR EXCHANGE PAINT

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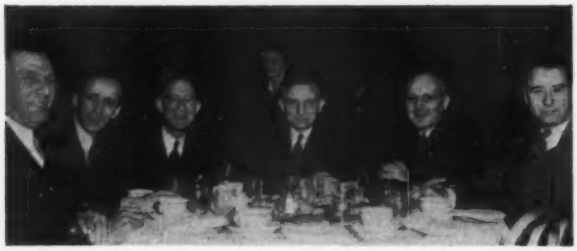

This group is composed of (left to right): CHAS. CREW, Geneva; A. B. WATERS, Lincoln; E. A. McKENNA, National Directory Co.; JOE BROWN, secretary, Nebraska State Railway Commission; CHAS. DICKENMAN, Beatrice, and T. LONGDON, Fairbury.

From this group we identify the two in the foreground: K. B. CARY (left), Lincoln, district commercial manager of the Lincoln Telephone & Telegraph Co., talking to BRIG. GEN. GUY N. HENNINGER, Lincoln, state director of Selective Service.

said. It has cooperated to the fullest extent and thus far has taken commission recommendations as fair and reasonable under the circumstances. Usually it gives notice that it does not propose to intervene in the matter, but adds that this statement should not be construed as approval by it of the proposed rate increases.

Two weeks ago Director Byrnes wrote the commission that in practice rate increases above the level existing September 15, 1942 should be granted only where indispensable to the continuance of an essential public service. The commission, however, continues its policy of considering each case on its merits, and in many instances it finds that a slight rate increase may mean survival or failure of that utility.

The Battle Against Inflation

Declaring that the battle against inflation is not one to be fought in the future, but that the nation is in it now up to its ears, Walter W. King, regional director at Kansas City of the wage and hour and public contracts division of the War Labor Board, urged telephone men to aid in holding the lines. Wages and salaries are not frozen, and the Little Steel formula applies only to groups of employes composing a collective bargaining unit, a plant, a company or an industry. Raises given individual workers for meritorious work or reclassifications are not counted in the 15 per cent. General increases will hereafter be granted only in very exceptional cases.

The board has announced no general principles respecting wage advances to correct substandards of living, but in this area its attitude is that wages under 50 cents an hour are substandard. This is not a compulsory minimum wage, however; only in line with provisions of the Fair Labor Standards Act.

Mr. King said that if a company pays switchboard operators with some experience 40 cents an hour to start with, and then raises them to a top of, say, 70 cents for experienced operators with two or more years' service, that would be the rate range for the job. The company could make any wage adjustments within it so long as it conformed to past policy and did not try to boost a new girl from 40 to 70 cents the first six months when in the past a company had taken a year to give her that increase. If a company hires a new operator of several years' experience, it cannot go beyond the 70-cent top without first getting approval from the regional board because that constitutes a wage increase, he stated.

It has been found, said Mr. King, that telephone company managers here and there have misconstrued Section 13a of the Wage-Hour Law as a blanket exemption, when in fact it exempts only switchboard operators employed in an exchange of less than 500 stations from both the minimum wage and overtime provisions. Linemen, repairmen, troubleshooters and all other workers are entitled to the benefits of the law. The division has taken the view that even operators are under the law if 20 per cent or more of their working time is spent on duties other than switchboard operations.

Mr. King said the recent ruling that periods of inactivity in a few occupations need not be considered hours worked even though the employe is subject to call applies to operators of small companies on the dogwatch. If over a period of several months the operator is able to get a good many hours of

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uninterrupted sleep each night, there is justification for disregarding the hours from midnight to 5 a.m. He also called attention to the ruling that before learning operators are hired at not less than 20 cents an hour for a period of 40 working days, a special certificate from the board is necessary.

Toll Compensation

H. F. McCulla, general commercial superintendent of the Lincoln (Neb.) Telephone & Telegraph Co., reported on the activities of the toll compensation committee of the United States Independent Telephone Association. He said that doubtless a great deal of confusion exists because of the various moves made on the checkerboard with regard to the efforts made on behalf of the Independents to secure more adequate compensation for the use made of their facilities in connection with interchange of long distance business with the Bell System. To straighten this out he gave in chronological order some of the principal events that have contributed to that confusion.

Two principal questions have been involved: (1) Do the toll rates cover fully and provide for the carrying of a toll message from the subscriber's station in the originating exchange to the called station in the terminating exchange, or merely from toll board to toll board; (2) what manner or method is approved for the separation of property, thereby establishing the pattern for separations studies that might follow.

Mr. McCulla said that, reduced to terms of benefits to the Independents, the voluntary reduction in toll rates made by the American Telephone & Telegraph Co. under the show-cause order of the Federal Communications Commission, means a gain immediately of long lines' traffic of $1,800,000 in recognition of additional costs of handling the traffic on a board-to-board basis; the disparity in pro rates between the long lines and the feeder lines of the associated Bell companies and the Independents and the station-to-station basis of stating toll rates, all three of which points were set up in the answer of the Independents in the pending case.

If the associated Bell companies see fit to make adjustments of a comparable nature in settlement with Independent connecting companies on intrastate traffic, there would be an additional net amount accruing to the Independents of some $3,700,000.

The mechanics necessary for working out distribution of additional revenues to the Independents in the new settlement procedure are complicated and time-consuming, and there is much to

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Machine shaved from tip to groundline — round, smooth poles with all knot projections eliminated — poles that are "turned" as though by a lathe, but finished with natural taper and contour of the timber — no excessive sapwood — "heat sterilized" from top to bottom, with ground line area penetrated to full sapwood thickness. Thoroughly protected from top of pole to extreme butt end with highly toxic preservative against *any* possible fungi attack—*dry* poles, *completely* manufactured, that are *RIGHT*.

Conservative engineers place serviceable life of Cedar Poles at 30 to 35 years when butt-treated by Bell's Fibre-Spreading Process *only*, but *now* poles subjected to this butt-treatment *plus* the "Long-Life" full length sterilization treatment *extend pole life still further*.

Select "Long-Life" Cedar poles for *your* lines, produced, manufactured and completely finished by a company with more than 50 years experience background. For a *sure thing* in service use and *durability* the "Long-Life" processed pole *is* supreme.

Also, Cedar Poles with standard butt treatments "AA"—"B"—"Guaranteed Half Inch" without the "Long-Life" Process if desired. Roofing, Gaining, and Borings, at nominal charge, to any required specification.

Bell Cedar Poles embody "perfect pole requisites" — Stability — Low Conductivity — Even Taper — Maximum Elasticity.

Ask *us* for prices when you need poles, and, too, drop us a line for detailed information about our "Long-Life" processing.

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MINNEAPOLIS, MINNESOTA

WESTERN RED AND NORTHERN WHITE
CEDAR POLES

be done. The toll compensation committee will devote all time and energy necessary to carry out the assignment.

Priorities and Rationing

Leighton H. Peebles, director of the communications division of the War Production Board, said that the work of his organization has been strengthened and simplified through the cooperation of trained heads of the telephone industry who work daily with the office in the handling of all of the difficulties of priorities and allocation of materials.

Despite all of the limitations that have been placed on the industry it has provided and maintained adequate service to the war program and has met all essential civilian needs. It has been doing its share by getting along with less materials and less manpower, and has been outstanding in its understanding of the necessity of control. When the necessity was indicated for conserving metal supplies needed for the armed forces the industry dug up three million instruments of various types and are putting those to use.

"Because of the scarcity of materials, the communications industry must make count every pound of material that is used and every manhour that is spent," he said. "We are counting on your ingenuity to obtain more service from less materials than anyone has heretofore dreamed possible."

Charles Smrha, regional director of the OPA, outlined the work being done in rationing, and stressed the need of whole-hearted and sympathetic cooperation in holding the second front, the home front, and in the solution of problems which vitally affect the war effort and future conditions.

D. P. Marti, director of the accounting department of the Lincoln School of Commerce, explained the operations of the victory tax and outlined the various proposals before Congress. He was of the opinion that a compromise would result in which 55 per cent only of the 1942 taxes would be demanded and payment allowed over a five-year period.

T. L. Frank, building equipment engineer of the Northwestern Bell Telephone Co., who was one of a class of civilians who last year attended an officers' school at Fort Leavenworth, Kan., detailed the various types of communications maintained within the Army, and the tremendous problems involved in supplying the armed forces.

Secretary George M. Kloidy reported the association is in a satisfactory financial condition. Membership remains at 99 companies with 16 associate members, representing 197,000 stations. He said that only one bill directed at the telephone industry had been introduced in the present state legislative session and that was asked by the industry to bring pole-setting on highways in line with the national safety code.

MERLE M. HALE was master of ceremonies at the stag dinner given April 13 by the Lincoln Telephone & Telegraph Co.

Convention committees were:

Nominating—Earl Volske, Stanton; Neil Schreck, Bertrand, and H. D. Thompson, Wisner.

Resolutions—Norman Otto, Lincoln; J. W. Richmond, Bassett, and R. E. Dutcher, Pierce.

The Lincoln company was host at a buffet supper Tuesday evening, April 13 and the Northwestern Bell Telephone Co. supplied entertainment in the form of two sound pictures.

V V

Michigan Bell Adds New Job To Improve Camp Service

The Michigan Bell Telephone Co. at Ann Arbor, Mich., recently announced the creation of the new post of "camp relations manager" to help meet the telephone service requirements of the military and production personnel at the various Army establishments and housing projects in Ann Arbor and adjacent communities.

Harold K. Nulf, who has been special equipment engineer in the company's headquarters office at Detroit, is assigned to the new post. Mr. Nulf has been with the company 19 years, all of that time on the general commercial engineer's staff in Detroit.

Raymond J. Bonini, Ann Arbor district commercial superintendent for the company, in announcing the appointment, said that telephone needs at military and housing establishments throughout the district have increased to such an extent that special supervision of the problem is required.

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FOR CABLE PROTECTION
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OFFICES IN ALL PRINCIPAL CITIES

Fort Sheridan Gets New Switchboard

Communication facilities adequate to serve constantly increasing military personnel have been assured the Army post at Fort Sheridan, Ill., by the recent installation of new and larger Kellogg equipment.

Col. F. C. Rogers, commanding the post, made the first call on the new system, following the cutting out of the old cables and the cutting in of the new. In charge of operations was Capt. Frank H. Peavey, post signal officer, assisted by Lt. Albert W. Gasper, assistant signal officer, and Mrs. Alice M. Woodgate, chief operator.

Traffic over the new board is averaging 20,000 to 35,000 calls per day.

V V

Exide Wins Renewal Of Army-Navy "E"

The Electric Storage Battery Co., manufacturer of Exide batteries, has been awarded the second star symbolizing six more months of production vital to our armed forces. It is stated this company was the first in Philadelphia to win the all-Navy "E" in March 1942, which preceded the giving of the Army-Navy awards to industry.

Exide batteries are serving the allied fighting forces in submarines, battleships, cruisers, tanks, trucks, bombers —in all over 100 different uses. The men and women of Exide have achieved this signal honor by continuing their war production in such volume as to justify this renewal.

V V

"You and Your Job" Booklet Issued by Stromberg

"How long will I work?" — "What kind of a company do I work for?"— "How is a fair day's work determined?"—"Where do I eat?"—"How about hospitalization insurance?" These are but a few of the questions most frequently asked by new war workers, according to Stanley H. Manson, executive secretary, production drive committee, at the Stromberg-Carlson Co., Rochester, N. Y.

"In order to answer these typical questions in a quick easy way, the company has gotten up a comprehensive pocket size booklet entitled 'You and Your Job' which is given to all new employes," Mr. Manson said. "This booklet is divided into four classifications—'You and Your Job,' 'You and Your Working Conditions,' 'You and Your Fellow Employes' and 'You and Your Company.'

McCann-Erickson, Inc. is the advertising agency which aided in the booklet's development.

...depend on Communications

CONSOLIDATED RADIO is proud to be making headphones for the men who fly the skies of the world for the United Nations. The lives of our men—indeed Victory itself—depend upon instant, uninterrupted intercommunications, and CONSOLIDATED RADIO headphones are "delivering the goods."

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SPECIALISTS IN MAGNETIC AND ELECTRONIC DEVICES

In the Nation's Capital

(Continued from page 17)

at least have to confine their operations to our own side of the tracks; namely, the Western Hemisphere. This arrangement might go a little hard on some lesser powers such as Poland, which is in grave danger of being swallowed, in part at least, by the Soviets. But it is pretty hard to see just how we are going to stop that unless we are prepared to start another fight with Russia, which nobody has been brash enough to suggest.

And so, even though Churchill's outline of four major "spheres" of political influence in the post-war world resemble vaguely the Axis *geopolik* ambitions with a mere change in feature roles, and even though it might serve to return us to a condition which might be described as a mild form of regional "isolationism," it looks very much as if Washington, London, Moscow, and Chungking have agreed on the principal features of the set-up.

Churchill would not talk that way if he did not have a reasonable assurance that the other powers would back him up. At that, it seems a somewhat more practical plan than the old League of Nations, which centralized everybody's responsibilities to such an extent that nobody would assume them. After all, Americans are going to be just as unenthusiastic about the possibilities of sending boys from Pennsylvania, Wisconsin, California, and so forth over to settle the interminable quarreling between the Serbs, Croats, and Slovenes in 1944 or 1945 as we were back in 1920. But if Johnny Bull is willing to take the responsibility and says to us, "I'll take care of the Balkans, you look out for the banana republics," we would probably take the suggestion as a very sensible division of powers.

What does this mean to business? Well, there has never been a division of political powers which did not sooner or later result in a corresponding division of trade routes and business opportunities. As Mr. Dooley said years ago, "Oi dunno whether th' Constitooshun follows th' flag; but Oim pretty shure that th' Yankee will follow the American dollar to th' end of th' earth!"

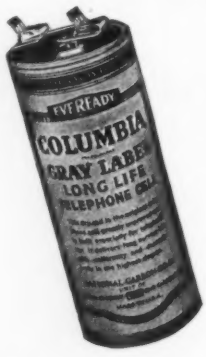
If, therefore, the Western Hemisphere is to define roughly our American sphere of post-war influence, it behooves American business to plan accordingly. It means we are going to do a lot more business with South and Central America. We are going to buy their products. We are going to sell them our manufactured items. South American utilities, for example, have heretofore been predominantly under Belgium, German, Dutch and French control. That will stop, of course. But will American telephone, electric, and gas manufacturers be prepared to move in and take over the business that formerly went to the sharp-shooting promoters from the Reich? They probably will be prepared.

Even operating utilities which depend so much on the prosperity of principal businesses in their own communities would be well advised to look around and take their bearings in the light of the business trends which we now know are ahead. The average small town usually has one or two main bread-winning industries upon which the prosperity of the whole town depends. What is the nature of these bread-winning industries in the town your company serves? Are they engaged largely in the export business? If so, did they previously do most of their business in Europe? If that is so, can it be readily converted to South America? These are questions that are at least worth asking one's self when one tries to look ahead to the prosperity of his own town on which his own business may well depend.

This is not to suggest, by any means, that the United States concerns are going to lose all the export and import business they formerly had with Europe or the Orient. It merely means that in the future such business will come under the supervision of Great Britain and China, respectively. If Great Britain and China do not have competitive lines of their own which might be favored, our own trade in these foreign parts may well continue to flourish. Conversely, European business with South America is going to have to pass more and more under our supervision. It may not be an ideal arrangement, but it looks like a very practical one. And what is most important, it looks like it has already been decided whether the rest of us like it or not.

* * *

Speaking of global thinking, the Communications Division of the WPB Office of War Utilities has done a good day's work in elevating Bruce H. McCurdy to the post of chief engineer. Anyone who has had much contact



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with Mac knows that he is the sort of canny Scotch-American that you could toss out indiscriminately anywhere in the universe and he would land right side up and give a good account of himself.

McCurdy has been globe trotting since he was one year old. At that tender age his parents took him from his birthplace in Massachusetts, to faraway Burma. He came back to New England while still a child to get an education and he got a good one at Brown and Harvard universities, graduating from the latter with a bachelor of science degree in 1923.

But the old wanderlust got him again when he went to work for the International Telephone & Telegraph, for whom he has toiled in such places as Madrid, Spain, Bucharest, Rumania, and England. When the war started he came back to this country to take the post of chief of the telephone section of the old communications branch.

In his new job, McCurdy will function as a sort of one-man brain trust for the OWU Communications Division. He will determine questions of engineering feasibility and make recommendations and decisions of a technical nature on all WPB communications policies. Enough has been said here to notify the readers, if they didn't already know, that Mac is eminently fitted for this high-powered and exacting post. But he is coming up in the world so quickly for a comparatively young fellow (42 at the last count) that your correspondent is going to make it his business to make a special study of the strange case of Mr. McCurdy and literally take him apart and find out what makes him tick. But that will have to wait for the future. Suffice it for the present to know that WPB Communications Division now has a new chief engineer.

* * *

Just when it seems as though we had our telephone and other utility ratings all tied up in a neat package at WPB, along comes threats of more trouble and possible change. The trouble is not with the utility ratings recently passed out by the OWU for repairs and maintenance. The trouble is the same old story of over-all deterioration of priority ratings in terms of available materials. As most readers of this department are well aware, priority ratings have been going down in value steadily since 1941.

You may remember when WPB started out with the idea of reserving for the military and Lend-Lease all "A" ratings and giving civilian priorities "B" ratings. Pretty soon certain "essential" civilian lines such as public

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Since 1857

ONE of the indications of a good workman is the way he cares for tools. Today, with the Army and Navy demanding quality tools in unheard-of quantities, there are few that can be spared for civilian needs. It is doubly important then that we make every tool we use give its full measure of service.

Most tools do not wear out. They are broken, damaged or lost long before they serve their full life. Conserving tools will add months, even years to their usefulness.

As a contribution to this tool-conservation program, we have prepared a booklet packed with suggestions on the care and safe use of tools. A copy of this booklet will be sent to anyone interested.

Handle tools carefully—treat them well. Quality tools are built to stand hard use—not abuse. Remember that a broken tool is a "break" for Hitler.

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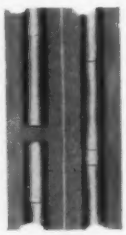
Tips Tree-Trimmers Cut Branches up to 1¼ Inch

The compound lever designed, wide jaw openings and the heat treated forged steel cutting blades make it easy to cut branches up to 1¼ inches in diameter with Tips rope operated tree trimmers.

The pruning saw is easily attached and adjusted, by wing screw, for trimming larger branches.



Additional pole lengths may be added by means of the splice shown above. Poles are solid spruce treated with three coats of pole preservative. Rope is ¼ inch treated spot cord. Write for complete details and prices.

A·B·CHANCE CO. CENTRALIA MISSOURI

utilities found that their "B" ratings did not get them anywhere, because there were so many of the same rank outstanding. So, you may remember that the utilities and some of the others were admitted to the lowest run of the "A" ratings. They were given A-10 for repair and maintenance. But once the door was opened, dozens of other industries crashed the gate and pretty soon revised A-10 ratings didn't mean any more than "B" ratings.

And so the process has been going on from month to month with the same number of wild cards in the priority deck being given higher and higher ratings, which eventually turned out to be worthless. A-1 was subdivided into A-1-a, A-1-b and so on. More recently we received the AA-5 which has been issued so indiscriminately that it has become about as cheap as a superlative adjective in Hollywood.

WPB is still trying to figure out how to correct the situation. There is much reason to hope that as the Controlled Materials Plan swings into action it will automatically stabilize the rest of the priority picture even though it extends itself only to three items: *copper, aluminum* and *steel.*

But meanwhile WPB is reported to be considering a reversal of the old procedure of boosting the label on the priority ratings. Instead they may devaluate. Ratings under this plan, if it is adopted, would be knocked down in such a manner that one class of ratings will be reserved for the Army and Navy, another for utility repair and maintenance, and still another for the rank and file of priority applicants who can make out some kind of a case for the essential nature of their requirements.

That is about as much as your correspondent can tell you of this impending change at this time. But don't be surprised if a few weeks hence our brand new "U" orders are amended so as to change the ratings presently assigned. Furthermore, such a revision, if it comes, should have the advantage of stabilizing the utility priority needs by removing them from competition with other classes of priority applicants. Of course, that has all been said before, but somehow it didn't work out. Maybe it won't work out this time either. This writer can only tell you of the plans. He can't make them work.

* * *

All employes of operating telephone companies and telephone equipment manufacturers are included in the "freeze work" order issued by the War Manpower Commission on April 17. Under terms of this order, designed to prevent "labor pirating," no telephone worker can be hired by any other employer in a war plant or other *essential* industry at higher wages for a period of 30 days after he or she leaves the employment of the telephone company. No such worker may take employment in a *non-essential* industry at higher wages for a period of 50 days after leaving the employment of the telephone company.

"Essential industry" is defined in the WMC list of 35 basic activities and industries which include all forms of public utilities, transportation, and communications service and manufacturers connected therewith.

In those areas where a WMC employment stabilization program is in operation, workers in one essential industry may leave employment in one essential industry for another within the 30-day period provided the former

COMING TELEPHONE MEETINGS

Ohio Independent Telephone Association, Deshler-Wallick Hotel, Columbus, April 27 and 28.

Indiana Telephone Association, Claypool Hotel, Indianapolis, May 5.

Pennsylvania Independent Telephone Association, Webster Hall Hotel, Pittsburgh, May 13 and 14.

Wisconsin Locally Owned Telephone Group, Park Hotel, Madison, May 18.

Wisconsin State Telephone Association, Park Hotel, Madison, May 19 and 20.

New York State Telephone Association, Hotel Syracuse, Syracuse, May 26 and 27.

Oregon Independent Telephone Association and Washington Independent Telephone Association, Joint Convention in Spokane, Wash., Davenport Hotel, June 18 and 19.

California Independent Telephone Association, Miramar Hotel, Santa Monica, June 24 and 25.

employer signs a waiver in the form of a "statement of availability" releasing the former employe. An increase in wages is permissible under such circumstances. Also, an employe of an essential industry, such as a telephone company, who has been discharged or laid off for more than seven days, or who can prove that his employer is not making good use of his service, may obtain such a "statement of availability" from the WMC.

All workers in non-essential industries are encouraged by the new WMC order to transfer their services to essential industries. They may do so freely, without loss of time and for increased wages if they can get them.

V V

FCC Says, Sorry, Soldier Rates Can't Be Changed

Because of its general interest the Federal Communications Commission on April 15 made public its reply to the serious question of one American citizen. A lady in Ohio, on April 5, took time off to write to Washington, suggesting that telephone rates to members of the armed forces be reduced. Regretting that circumstances are not favorable to such a course, the commission in its answer said:

This matter has been under consideration by the commission. While it has been generally agreed that reduced rates to members of the armed forces would be beneficial to the morale of the armed forces, representatives of the Bell System opposed such reduction for the reason that telephone facilities serving Army camps are already overtaxed and the telephone company would be unable to secure additional equipment and personnel necessary to handle the increased traffic at lower rates, or properly to identify the person entitled to such rates. The Signal Corps of the United States Army also opposed reduced rates to members of the armed forces, because of the lack of plant facilities and the necessity of increasing its civilian and military personnel to handle the increased traffic, the responsibility of post signal officers in collecting toll charges, and the difficulty of identifying persons entitled to such rates.

The increased burden on long distance telephone facilities as the result of wartime demands has been a serious problem because of possible effects in delaying calls essential to the war effort.

It is pointed out, however, that where the problems of time, facilities and the identification of the user were more simple, the commission did facilitate low communications rates for the personnel of military services overseas. On May 27, 1942, the FCC announced special low rates of 60 cents per fixed-text message under "EFM" tariffs for cablegrams and radiograms filed by American companies operating international carriers.

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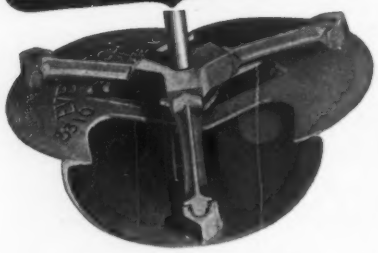

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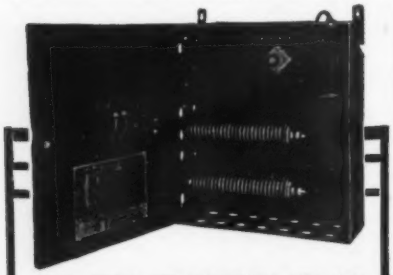

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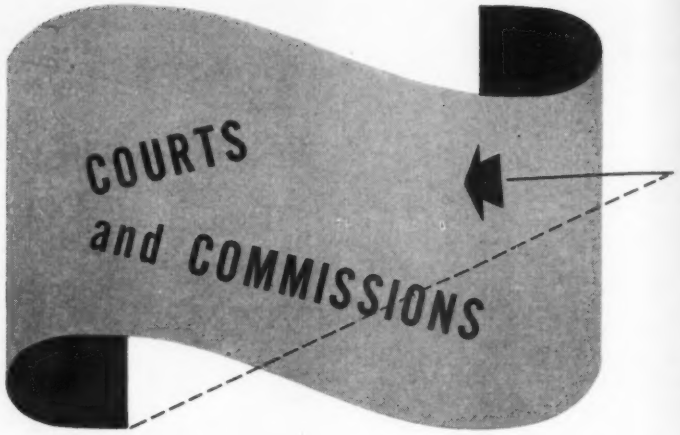

Oklahoma Toll Case Taken Under Advisement

A many-sided controversy between the Oklahoma Rural Telephone Co. of Enid, Okla., which claims to be a co-operative concern, and H. H. Harris, owner and operator of the Drummond (Okla.) Telephone Exchange, was heard before the Oklahoma Corporation Commission on April 14.

The commission closed the hearing and took the matter under advisement, but gave Mr. Harris a reasonable time to ask for another hearing if he found new evidence relative to the case.

The Oklahoma Rural company presented evidence intended to support its application that Mr. Harris and the Southwestern Bell Telephone Co. be ordered to give the rural company long distance connections at Drummond. The latter has a switchboard just outside the city limits of Drummond which was constructed two years ago but has never been connected with long distance lines of the Bell because that company has a contract with Mr. Harris to furnish him such facilities for Drummond and adjacent territory.

Oklahoma Rural board members testified that their company has enough wire, poles and other material on hand to construct a trunk-line for a distance of three blocks to the Harris exchange, and asks the commission to require Harris to permit such connections and to require the Bell to furnish toll line service to about 100 subscribers of the rural company at Drummond and Barr, four and a half miles south of Drummond. It was developed that these subscribers cannot secure long distance connections over their telephones but must go to the Harris exchange or to a Harris subscriber to get such connections.

Mr. Harris contested the application on the grounds the Oklahoma Rural established its switchboard just outside Drummond without obtaining a certificate of convenience and necessity and for the purpose of competing directly with his Drummond exchange. He also contended that he has a contract with Southwestern Bell—and has had one for years—to handle the toll calls out of Drummond and from his exchange area.

B. Richardson, telephone engineer of the commission, presented a proposed compromise, which Mr. Harris said he would agree to, that the latter complete a trunk line from his Drummond ex-

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change to the exchange of the Oklahoma Rural Telephone Co. at Barr and would give toll service to the rural company subscribers if routed between Barr and the Harris exchange in Drummond. Representatives of the rural company present testified that this would not be entirely satisfactory to them as they wanted shorter and more direct toll connection between their Drummond exchange and the one owned and operated by Mr. Harris at that point.

This was the third time a phase of this controversy has come before the Oklahoma commission. Litigation between the companies also is pending in the courts at Enid.

V V

Summary of Commission Hearings and Rulings

Illinois Commerce Commission

May 4-5: Hearing to be continued on petition filed by Illinois Telephone Co. for authority to increase rates for telephone service in Jacksonville and 16 neighboring communities which are as follows: Carrollton, Alexander, Bluffs, Greenfield, Hillview, Lighterberry, Manchester, Murrayville, Meredosia, New Berlin, Patterson, Pleasant Plains, Roodhouse, White Hall, Winchester and Woodson.

Kansas State Corporation Commission

April 19: Hearing on application filed by Castleton Telephone Exchange for authority to issue notes secured by its mortgages in the amount of $2,100.00.

April 26: Hearing on application filed by Wamego Telephone Co. for authority to make certain changes in rates for telephone service at Wamego.

April 26: Hearing on application filed by Everest Mutual Telephone Co. for authority to make certain changes in rates for telephone service at Everest.

May 3: Hearing on application filed by Peck Mutual Telephone Co. for authority to make certain changes in rates for telephone service at Peck.

May 10: Hearing on application filed by Corbin Telephone Exchange for authority to make certain changes in rates for telephone service at Corbin.

May 10: Hearing on application filed by Freeport Telephone Exchange Co. for authority to make certain changes in rates for telephone service at Freeport and vicinity.

New York Public Service Commission

April 22: Hearing on petition filed by Oneida County Rural Telephone Co. for authority to issue a certain evidence of indebtedness.

Ohio Public Utilities Commission

May 10: Hearing on application filed by Ohio Standard Telephone Co. for authority to increase rates in its Decatur, Georgetown and Russellville exchanges.

West Virginia Public Service Commission

May 12: Hearing on application filed by Oakdale Telephone Co., Mannington, for authority to increase its annual charge for local service in Marion and Harrison from $6.00 to $8.00 per year.

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POWER EQUIPMENT—Telephone and switchboard generators, charging and ringing machines and all similar types of equipment can be rebuilt and made more efficient by AR rebuilding methods.

More than 1000 telephone companies now use this valuable service. And at the present time, with conservation the order of the day, it assumes still greater importance as a saver of critical materials. Write for further information and prices.

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NOTE: Orders for Autelco Rebuilding service may qualify for priority rating under Maintenance and Repair. Please include priority certification with all orders.

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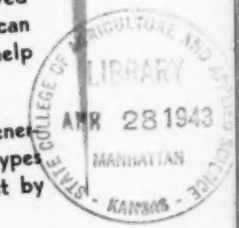

Safety Rules for Telephone Workers

Available figures indicate that our accident rate in the United States is double that of our enemies. For each 100,000 population 86 Americans are killed by accidents each year. In Germany only 43 die and in Japan only 42. During wartime, accidents to workers mean a serious loss which is made even more serious due to a reduced number of trained men now available in the communication industry.

Each accident involving death or permanent disability or loss of sight means a loss of 6,000 man days of work. Other accidents range from 300 man days for the loss of a big toe to 4,500 man days for the loss of an arm or leg.

In the United States each year accidents involving workers cause a loss of 500 million man days of industrial production. This time is lost forever and could be utilized to build 20 battleships, 100 destroyers, 9,000 bombers or 40,000 tanks.

Accidents are expensive and every effort should be made at all times to guard the safety of workers. Also, accidents at this time, in addition to their cost, prove

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"Free Bulletin"

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to be of material aid to the enemy. Such aid is the one thing that every good American wishes to avoid, and so the following suggestions are offered as a betterment and in the hope that many accidents will thus be avoided. A proper observance of these suggestions will reduce accidents in any telephone exchange and, consequently, save much lost time in the war effort:

(1) Workers should familiarize themselves with necessary safety rules. When a worker disregards safety regulations or takes chances which endanger himself or others, a safety hazard is created. Companies should make an effort to educate their employes in the observance of safe practices.

(2) Workers should be instructed to report all unsafe conditions promptly to their supervisors and immediate remedial action should be taken to correct the condition.

(3) Each worker should be made familiar with the hazards connected with his work and the safety precautions which must be observed.

(4) New or inexperienced workers should not be assigned to dangerous duties except under the direct supervision of another competent worker.

(5) Supervisors should be held responsible and should be required to make a periodical inspection of all tools and replacement should be made of any defective tool.

(6) Workers engaged in a hazardous occupation should be required to make use of all approved and provided protective equipment and tools.

(7) Work benches and office furniture, such as desks, should be kept free of splinters and rough edges.

(8) Smoking or the carrying of lighted pipes, cigarettes or cigars should be prohibited in shops, garages or other locations where inflammable substances might be stored.

(9) Lighted cigars, cigarettes and pipe ashes should be deposited only in approved ash receptacles. Wastepaper baskets should *never* be used for that purpose.

(10) Wastepaper should at all times be deposited in approved wastepaper baskets.

(11) A separate container should be provided for metallic objects, broken glass and all discarded smoking material.

(12) The use of an open flame, such as a blow torch, should be prohibited near gasoline, oil-soaked waste, or other inflammable material.

(13) Defective cords on electrically-operated tools and appliances should be discarded immediately.

(14) Electric fans used in the telephone exchange should be mounted on suitable wall brackets.

(15) Workers should be cautioned never to sit on the edge of a chair equipped with casters.

(16) Doors should—in all cases—be opened and closed carefully.

(17) Never hurry when going up or down stairs and always make use of the hand-rail.

(18) Pencil sharpeners should never protrude over the edges of desks.

(19) Workers should be cautioned to report all accidents for proper treatment, no matter how trivial.

(20) Approved first aid equipment and supplies should be kept readily available and maintained in good condition at all times.

(21) All workers should be made familiar with the location and proper use of fire protection equipment and fire exits.

(22) "Horseplay" among workers is dangerous and should be strictly prohibited.

(23) Properly designed racks and storage facilities should be provided for tools and special equipment to protect them when not in use.

(24) When opening packing boxes and crates, immediately remove all nails from the loose boards.

(25) The tops of cabinets, file cases and lockers should not be used for storage purposes.

(26) Empty boxes and other containers should be disposed of promptly and properly.

(27) Floors should, at all times, be kept free of slippery substances such as grease and oil.

(To be continued)

A valuable addition to any telephone company is the dynamometer which will increase the accuracy and efficiency of the plant department.

Dynamometer Is Essential In Maintenance Work

The need of a dynamometer for telephone use has been well known for years but only recently has one been made available which is suited to telephone needs and which may be obtained at a price within the means of the average telephone company. Such an instrument is pictured in the accompanying illustration. For telephone use this instrument normally has a range from 0 to 1000 pounds, although a range up to 20,000 pounds may be obtained if desired, it is stated.

The applications of a dynamometer in telephone work are numerous and a few of the principal uses are indicated in the following:

(1) To obtain the expected life from aerial cable the supporting messenger strand must be pulled to the proper tension. When a cable is placed on a tight strand it may crystallize from vibration or, if too loose, ring cuts may be the result. When messenger is pulled by one of the usual rule-of-thumb methods, an over-tension may result which places an excessive load on the strand.

(2) The proper tension on line wire is most important if its maximum life and service is to be expected. When wire is pulled to an over-tension a great overload is placed on it by sleet

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MAINTENANCE MATERIAL

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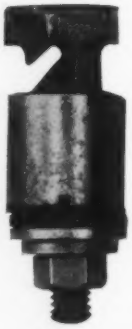

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which usually causes it to break. Both the sag method obtained by sighting or the oscillating method obtained by counting vibrations require considerable time and are usually not accurate unless performed by experts. It is claimed the dynamometer will permit pulling wire to the proper tension accurately and quickly.

(3) Anchors that fail are usually the wrong type for a particular job. When the strain on a certain guy is known, if the anchor used is not of a proper type it may be changed. A knowledge of the strain involved also permits the building of corners which will hold the line at all times.

The dynamometer has numerous other uses which makes it a worthwhile investment in any telephone exchange. A knowledge of strains involved eliminates guesswork and makes possible positive results.

V V

Western Electric Manufacturing Army Seven-Message Cable

A field cable over which seven telephone and telegraph messages could be transmitted simultaneously and secretly for U. S. Army use is in the process of manufacture by the Western Electric Co. in Kearny, N. J.

The cable, about as thick as a lead pencil, is made in quarter-mile lengths, and these can be snapped together as fast as the cable can be laid off a moving truck.

Intermediate amplifiers make the cable useful to a distance of 150 miles, the company said, and if the enemy taps it all he will hear is a lot of unintelligible squeaks and squeals.

"Spiral-4" is the official name of the new cable, which consists of four spiraling wires covered with rubber and employs the carrier wave principle of communication. Currents oscillating at seven different frequencies travel over it without interfering with each other.

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